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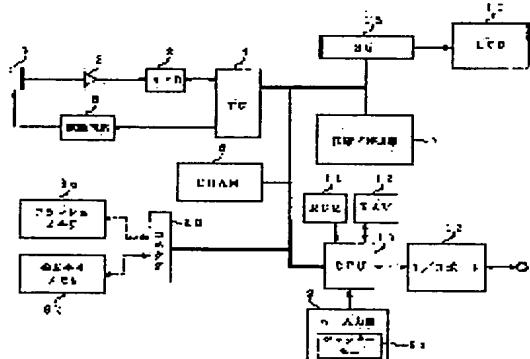
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(54) ELECTRONIC IMAGE PICKUP DEVICE, ELECTRONIC CAMERA SYSTEM AND RECORDING MEDIUM

(57)Abstract:

PROBLEM TO BE SOLVED: To store the image data of photographed images in a latter storage means as they are by storing the photographed images as image data in either an image data reloadable storage means or an image data unreloadable storage means.

SOLUTION: A CCD 1 converts a still picture to an electric signal, that signal is converted to amplified and converted to digital data by a buffer 2 and an A/D converting part 3, after-wards, according to a generated timing signal, a timing generator(TG) 4 fetches image data and temporally stress them in a DRAM (dynamic memory) 6. Then, a compression/expansion part 7 compresses a luminance signal and a chrominance signal separated by color arithmetic processing and the compressed image data (luminance signal and chrominance signal) are stored in a storage/erasure enabled flash memory 8a or in an erasure disabled memory 8b with which image data can be stored but erasure is inhibited by a software or the like. These memories 8a and 8b can be attached/detached through a connector 20.



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CLAIMS

[Claim(s)]

[Claim 1] An electronic imaging device comprising:

A photographing device which photos an image.

The 1st memory measure that memorizes image data so that rewriting is possible.

The 2nd memory measure that rewrites image data and is memorized improper.

A storage control means memorized to either one of said 1st memory measure or said 2nd memory measure by making into image data an image photoed by said photographing device.

[Claim 2] The electronic imaging device according to claim 1, wherein it is removable in said 1st and 2nd memory measures and is equipped with either at once.

[Claim 3] Provide a selecting means which chooses as which of said 1st memory measure or said 2nd memory measure whether image data is memorized, and said storage control means, The electronic imaging device according to claim 1 memorizing an image photoed by said photographing device to a memory measure with said selected selecting means as image data.

[Claim 4] An imaging means which picturizes a picture of a photographic subject.

A directing means which directs image taking by said imaging means.

A memory measure which memorizes a picture corresponding to a picture which answered operation of said directing means and was picturized by said imaging means.

A storage control means which controls writing and read-out of said memory measure.

A reproduction means which reproduces a picture memorized by a picture picturized by said imaging means or said memory measure.

Are the electronic imaging device provided with the above, answer operation of said directing means, provide a control means which adds identification information which shows that it is unchangeable in said picture, and said storage control means, When said identification information is added to an already memorized picture at the time of writing control to said memory measure, a picture to which said identification information was added is made unchangeable by not performing writing processing again to the picture.

[Claim 5] The electronic imaging device comprising according to claim 4:

An encoding means as which said control means enciphers said picture with said identification information.

A decoding means which decodes enciphered data.

[Claim 6] The electronic imaging device comprising according to claim 4:

An embedding means by which said control means embeds predetermined information in said picture.

Separating mechanism which separates said predetermined information from a picture where said predetermined information is embedded.

[Claim 7] The electronic imaging device according to claim 4 provided with a warning means which displays warning information which warns of the ability not to be changed when said control means is reproducing a picture picturized by said reproduction means from said imaging means.

[Claim 8] Said directing means has two steps of distance, and said warning means is operated to said control means in the 1st distance, The electronic imaging device according to claim 7 making control which writes a picture corresponding to a picture picturized by said storage control means by said imaging means in the 2nd distance in said memory measure perform.

[Claim 9] The electronic imaging device according to claim 4, wherein said memory measure comprises a main part of an electronic imaging device removable.

[Claim 10] The electronic imaging device according to claim 4 provided with a means of communication which transmits and receives data memorized by said memory measure.

[Claim 11] The electronic imaging device according to claim 4, wherein it has a connecting means linked to information machines and equipment and said directing means operates with a signal from information machines and equipment connected by said connecting means.

[Claim 12] The electronic imaging device according to claim 4 having [whether said control means makes changeable a picture which answers operation of said directing means and said memory measure is made to memorize or change being made improper, and] a selecting means to choose.

[Claim 13] The electronic imaging device according to claim 4, wherein it has an editing means which edits a picture memorized to said memory measure and said reproduction means does not reproduce a picture to which

said identification information was added at the time of edit by said editing means.

[Claim 14]It is an electronic camera system which consists of an electronic camera and a means of communication which were connected via a communication line, and information machines and equipment, Transmission of a picture picturized with said electronic camera is enabled via said communication line, An electronic camera system when said electronic camera is set [a picture which has a means to set up said picture improper / change / and to transmit, and was received via a communication line] up improper [change], wherein it cannot change this picture by a side which received.

[Claim 15]Even if it decodes a picture which is enciphered with identification information which shows that a picture set up improper [said change] is unchangeable, and was this enciphered by a receiver, The electronic camera system according to claim 14 characterized by this picture being unchangeable when identification information which shows that it is unchangeable is added.

[Claim 16]A storage comprising:

A program code which is a storage which is read by computer and memorizes a executable program code, and makes a picture of a photographic subject picturize.

A program code to which shutter operation is made to perform.

A program code which answers this shutter operation and makes a memory measure memorize a picture corresponding to said picturized picture.

A program code which controls writing and read-out of said memory measure, A program code which reproduces a picture memorized by said picturized picture or said memory measure, A program code which adds identification information which shows that said shutter operation cannot be answered and it cannot change in said picture, A program code which makes unchangeable a picture memorized by said memory measure that it should control not to perform writing processing when said identification information is detected and said identification information is added to said picture at the time of writing control to said memory measure.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the storage which memorized the program code which performs image pick-up of the electronic imaging device which picturizes and memorizes a picture, the electronic camera system which transmits the picturized picture, and a picture, memory, and reproduction control.

[0002]

[Description of the Prior Art]Conventionally, the optical still picture etc. which were caught with the lens are changed into an electrical signal as an electronic imaging device with image sensors, such as CCD (Charge Coupled Device; charge coupled device) and MOS, The electronic "still" camera memorized to semiconductor memory and recording media, such as a floppy disk, is known. In this electronic "still" camera, since the still picture etc. are recorded as electric information, It has the feature that it can reproduce with a television set then, can transmit to a remote place using a communication line, or can transmit to other apparatus (for example, other electronic "still" cameras, computers, etc.) using infrared rays, or various image processing can be performed.

[0003]

[Problem(s) to be Solved by the Invention] By the way, in the conventional electronic "still" camera mentioned above, the point that the photoed image data can usually be rewritten freely has been the feature. That is, with the camera using a film, it is possible to eliminate the photoed impossible image data or to overwrite image data new on image data by holding the photoed image as image data which is digital data. Thus, photography number of sheets is securable by writing in the newly photoed image data on unnecessary image data or the image data in which photography failed.

[0004] However, also in use of the above-mentioned electronic "still" camera, image data may be modified, or it is not what was rephotoed repeatedly and the photoed image as it is may be needed like the camera using a film. However, since image data was fundamentally memorized so that rewriting was possible, there was a problem that it could not be confirmed whether it is the image as it is photoed or it could not memorize the photoed image as it is.

[0005] Then, an object of this invention is to provide the electronic imaging device, electronic camera system, and storage which can memorize the photoed image as it is as image data.

[0006]

[Means for Solving the Problem] Invention this invention according to claim 1 is characterized by an electronic imaging device comprising the following for the above-mentioned purpose achievement.

A photographing device which photos an image.

The 1st memory measure that memorizes image data so that rewriting is possible.

The 2nd memory measure that rewrites image data and is memorized improper.

A storage control means memorized to either one of said 1st memory measure or said 2nd memory measure by making into image data an image photoed by said photographing device.

[0007] It is removable like a statement to claim 2 in said 1st memory measure and the 2nd memory measure, for example, and may be made to be equipped with either at once preferably.

[0008] A selecting means chosen [according to claim 3] for to which image data shall be memorized between said 1st memory measure or said 2nd memory measure like, for example is provided preferably, It may be made for said storage control means to memorize an image photoed by said photographing device to a memory measure with said selected selecting means as image data.

[0009] In order to attain the above-mentioned purpose, in an electronic imaging device by claim 4 statement. An imaging means which picturizes a picture of a photographic subject, and a directing means which directs image taking by said imaging means, A memory measure which memorizes a picture corresponding to a picture which answered operation of said directing means and was picturized by said imaging means, In an electronic imaging device possessing a storage control means which controls writing and read-out of said memory measure, and a reproduction means which reproduces a picture memorized by a picture picturized by said imaging means or said memory measure, Answer operation of said directing means, provide a control means which adds identification information which shows that it is unchangeable in said picture, and said storage control means, When said identification information is added to an already memorized picture at the time of writing control to said memory measure, a picture to which said identification information was added is made unchangeable by not performing writing processing again to the picture.

[0010] Said control means may be preferably provided with the encoding means according to claim 5 which enciphers said picture with said identification information, and a decoding means which decodes enciphered data like, for example.

[0011] Said control means may be preferably provided with separating mechanism which separates said predetermined information, for example from the embedding means according to claim 6 which embeds predetermined information in said picture like, and a picture where said predetermined information is embedded.

[0012] Preferably, when said control means is reproducing the picture according to claim 7 picturized by said reproduction means from said imaging means like, for example, it may be provided with a warning means which displays warning information which warns of it being unchangeable.

[0013] Preferably said directing means, for example like a statement to claim 8, It may be made to make control which writes a picture corresponding to a picture which has two steps of distance, operated said warning means to said control means in the 1st distance, and was picturized by said storage control means by said imaging means in the 2nd distance in said memory measure perform.

[0014] Said memory measure may comprise a main part of an electronic imaging device removable, for example

like a statement to claim 9 preferably.

[0015]It may be made to have preferably a means of communication for which the data according to claim 10 further memorized by said memory measure like is transmitted and received, for example.

[0016]It has the connecting means according to claim 11 further connected with information machines and equipment like, for example, and may be made for said directing means to operate preferably with a signal from information machines and equipment connected by said connecting means.

[0017]It may have whether said control means makes it is desirable and possible, for example change of the picture according to claim 12 which answers operation of said directing means and said memory measure is made to memorize like or change is made improper, and a selecting means to choose. It has preferably an editing means for which the picture according to claim 13 further memorized to said memory measure like is edited, for example, and said reproduction means may not be made not to reproduce a picture to which said identification information was added at the time of edit by said editing means.

[0018]In order to attain the above-mentioned purpose, in an electronic camera system by claim 14 statement. It is an electronic camera system which consists of an electronic camera and a means of communication which were connected via a communication line, and information machines and equipment, Transmission of a picture picturized with said electronic camera is enabled via said communication line, said electronic camera has a means to set up said picture improper [change] and to transmit, and when a picture received via a communication line is set up improper [change], this picture cannot be changed by a side which received. A picture set up improper [said change] preferably, For example, it is enciphered with identification information which shows the thing [that it is / like / unchangeable] according to claim 15, and even if it decodes a picture this enciphered by a receiver, when identification information which shows that it is unchangeable is added, it may prevent from changing this picture.

[0019]In order to attain the above-mentioned purpose, in a storage by claim 16 statement. A program code which is a storage which is read by computer and memorizes a executable program code, and makes a picture of a photographic subject picturize, A program code to which shutter operation is made to perform, and this shutter operation are answered, A program code which makes a memory measure memorize a picture corresponding to said picturized picture, A program code which controls writing and read-out of said memory measure, A program code which reproduces a picture memorized by said picturized picture or said memory measure, A program code which adds identification information which shows that said shutter operation cannot be answered and it cannot change in said picture, When said identification information was detected and said identification information was added to said picture at the time of writing control to said memory measure, a program code which makes unchangeable a picture memorized by said memory measure that it should control not to perform writing processing was provided.

[0020]

[Embodiment of the Invention]Hereafter, an embodiment of the invention is described with reference to drawings as a mode of the 1 operation applied to the electronic "still" camera.

A. The lineblock diagram 1 of the composition A-1. electronic "still" camera of the mode of the 1st operation is a block diagram showing the composition of the electronic "still" camera in the mode of operation of the 1st of this invention. In a figure, 1 is CCD (or MOS), changes into an electrical signal the still image which carried out image formation via the lens which is not illustrated, and supplies it to the buffer 2. After the buffer 2 amplifies the above-mentioned still image signal to a predetermined level, it is supplied to the A/D conversion part 3. After the A/D conversion part 3 changes the above-mentioned still image signal into digital data (henceforth image data), it is supplied to TG(Timing Generator; timing generator) 4. According to this timing signal, TG4 incorporates described image data and it outputs it to a data bus while it generates the timing signal for controlling the drive circuit 4 which drives CCD1 and supplies this to the drive circuit 5.

[0021]Next, 6 is DRAM (dynamic memory) and is a storage which stores temporarily the image data which the above-mentioned TG4 outputs. This image data is read when photography for one screen is completed, and color data processing which separates a luminance signal and a chrominance signal is performed. The above-mentioned luminance signal and chrominance signal from which 7 was separated by color data processing, For example, while compressing with compression technology, such as a JPEG (Joint Photographic Coding Experts Group) method, they are the compression/extension part which performs processing which elongates the compressed image data. 8a and 8b store two or more image data (a luminance signal and a chrominance signal) compressed [above-mentioned], It is a memory removable to the device concerned via the connector 20, and 8a is a flash memory in which memory/elimination (overwrite) is possible, and although 8b can memorize image

data, it is the elimination improper memory to which elimination (overwrite) was forbidden by software or hardware.

[0022]In the mode of the 1st operation, either the above-mentioned flash memory 8a or the elimination improper memory 8b is used for the connector 20, fitting in. When it is the normal use in which operation of eliminating the already stored arbitrary image data and storing new image data in this area again is included, The flash memory 8a is equipped and used, and in the use which holds the once stored image data as it is, and eliminates it, or cannot overwrite it, the elimination improper memory 8b is used, equipping.

[0023]9 is a key input section and comprises operational mode (the shutter key 9a, a reproduction key, a picture delivery key) of the electronic "still" camera concerned, a switch which sets up various preset values, etc. The state of the key input section 9 is incorporated into CPU(central processing unit) 10.

[0024]CPU10 controls operation of each part according to the state of the program in ROM11, and the switch of the above-mentioned key input section 9. Especially CPU10 stores in the flash memory 8a or the elimination improper memory 8b the image data once stored in DRAM6 mentioned above.

[0025]ROM11 has memorized magnetic besides semiconductor memory, the program which may be the storages which comprised an optical recording medium and is executed by the above-mentioned CPU10, and data. It is equipped with this storage (ROM11), enabling the thing provided fixed or free attachment and detachment. A program, data, etc. which are recorded on a storage (ROM11), It may have composition received and memorized from other apparatus connected via the communication line etc., The above-mentioned storage (ROM11) may be formed in other apparatus side connected via the communication line etc., and it may have composition which uses the program memorized by this storage (ROM11), data, etc. via a communication line.

[0026]Next, 12 is RAM (random access memory) and is used as working area of above-mentioned CPU10. 13 is an I/O Port which functions as an interface which outputs and inputs the video signal etc. which were changed into the serial signal, and especially, in the mode of the 1st operation, when delivering and receiving the image data recorded among other apparatus (for example, an electronic "still" camera, a computer, etc.), it is used. Next, 15 is SG (Signal Generator; video signal generator), it superimposes a chrominance signal on the luminance signal elongated by compression / extension part 7, adds a synchronized signal etc., creates a digital video signal, and outputs it to LCD16. LCD(liquid crystal display) 19 displays an image according to the digital video signal supplied via the buffer 18.

[0027]A-2. Explain operation of the mode of the 1st operation, next the operation of an electronic "still" camera by the mode of the 1st operation mentioned above. The following explanation explains the example which made impossible [elimination (overwrite)] the elimination improper memory 8b mentioned above with software.

(a) Memory detection processing drawing 2 is a flow chart for explaining operation of the memory detection processing of the electronic "still" camera mentioned above, and the program shown with this flow chart is stored in ROM11. Drawing 3 and drawing 4 are the key maps for explaining memory detection processing. First, in Step S10, the memory (a flash memory or an elimination improper memory) with which it was equipped via the connector 20 is accessed, and it is judged whether it is equipped with the flash memory 8a according to the response. Here, if the connector is equipped with the flash memory 8a as shown in drawing 3 (a), it will progress to Step S12, and as shown in drawing 3 (b), flag F1 which shows the kind of memory with which it is equipped will be set to "0."

[0028]On the other hand, if not equipped with the flash memory 8a, it progresses to Step S14 and it is judged whether it is equipped with the elimination improper memory 8b. And if the connector is equipped with the elimination improper memory 8b as shown in drawing 4 (a), it will progress to Step S16, and as shown in drawing 4 (b), above-mentioned flag F1 will be set to "1." If equipped with neither of the memories, it progresses to Step S18 and displays not being equipped with the memory for preservation of image data on LCD16.

[0029](b) Image recording processing, next drawing 5 are the flow charts for explaining image recording processing of the electronic "still" camera by the mode of the 1st operation, and the program shown with this flow chart is stored in ROM11. First, the image photoed by CCD1 is incorporated at Step S20. Next, after adding a synchronized signal etc. to the incorporated image data from SG15 at Step S22, creating a digital video signal and changing into an analog signal with D/A converter 17, it displays by LCD16. And if it judges whether the shutter key 9a of the key input section 9 was pressed and is not pushed at Step S24, it returns to Step S20. Therefore, the image photoed by CCD1 will be displayed on LCD9 by predetermined sampling timing (real time).

[0030]On the other hand, in the above-mentioned process, a push on the shutter key 9a will judge whether it is equipped with whether flag F1 which shows the type of a memory with which Step S26 is followed and equipped is "0", and the flash memory 8a. And when equipped with the flash memory 8a. When it progresses to Step S30

and the shutter key 9a is pressed, once storing in DRAM6 the image data which TG4 outputs, it compresses by compression / extension part 7, and stores in the flash memory 8a in the memory with which it is equipped, and this case according to the present writing address. Next, at Step S32, a writing address is updated and it returns to Step S20.

[0031]On the other hand, when flag F1 is "1" (i.e., when equipped with the elimination improper memory 8b), it progresses to Step S28 and it is judged whether the memory area shown with the present writing address is empty area. And if this memory area is empty area, i.e., the area where image data has not been recorded yet, when it will progress to Step S30 mentioned above and the shutter key 9a will be pressed, Once storing in DRAM6 the image data which TG4 outputs, it compresses by compression / extension part 7, and stores in the elimination improper memory 8b in the memory with which it is equipped, and this case according to the present writing address. Next, at Step S32, a writing address is updated and it returns to Step S20.

[0032]The memory area where the memory with which it is equipped is shown with the present writing address by the elimination improper memory 8b not empty area but when image data is already recorded, It returns to Step S20, without displaying the message of the purport that it cannot write in on LCD16, and recording image data at Step S34.

[0033]Hereafter, the image photoed by CCD1 is recorded on the memory with which it equipped then as image data by carrying out repeat execution of Steps S20-S34. When the memory with which it is equipped is the flash memory 8a at this time, Irrespective of whether image data is already recorded on the memory area shown by a writing address, While recording new image data on the memory area, when the memory with which it is equipped is the elimination improper memory 8b, even if it is going to record new image data on the memory area where image data is already recorded, it writes in and refuses as improper.

[0034]Thus, the recorded image data can make elimination improper, without needing complicated operation, since elimination and overwrite of image data which were already recorded are forbidden when [which was mentioned above] equipped with the elimination improper memory 8b in the mode of the 1st operation. The recorded image data can make elimination improper, without performing special processing, since the access itself will be refused if it is newly going to store image data in the address with which image data was already stored when the elimination improper memory 8b cannot eliminate by hardware. What is necessary is just to let the elimination improper memory 8b be a new thing, if an availability is lost in the elimination improper memory 8b.

[0035]B. Explain the mode of the 2nd operation, next the mode of operation of the 2nd of this invention.

B-1. The lineblock diagram 6 of the mode of the 2nd operation is a block diagram showing the composition of the electronic "still" camera by the mode of the 2nd operation. The same numerals are attached to the portion corresponding to drawing 1, and explanation is omitted. In a figure, in the mode of the 2nd operation, while establishing permanently the rewritable flash memory 8a, it can equip with the elimination improper memory 8b, enabling free attachment and detachment. With the directions from CPU10, the selection circuitry 21 chooses either one of the flash memory 8a or the elimination improper memory 8b, and connects the data bus and address bus by the side of a memory to the data bus and address bus of CPU10. CPU10 stores image data to the memory selected by this selection circuitry 21. CPU10 can detect now whether it is equipped with the elimination improper memory 8b via the selection circuitry 21.

[0036]B-2. Explain operation of the mode of the 2nd operation, next the operation of the mode of the 2nd operation mentioned above.

(a) In the electronic "still" camera by the mode of the 2nd operation which elimination improper memory detection processing drawing 7 mentioned above, It is a flow chart for explaining operation of the processing which detects whether it is equipped with the elimination improper memory, and the program shown with this flow chart is stored in ROM11. First, in Step S40, wearing of the elimination improper memory 8b is detected via the selection circuitry 21, and it is judged whether based on the detection result, it is equipped with the elimination improper memory 8b at Step S42. And when not equipped with the elimination improper memory 8b. As shown [Step S44] in drawing 8, when the flag F3 which shows wearing / un-equipping is set to "0 (unequipped)" and it is equipped with the elimination improper memory 8b, as shown in drawing 8, the above-mentioned flag F3 is set to "1 (wearing)" at Step S46. Since the flash memory 8a is permanent installation, the flag F2 to this memory is set to "1."

[0037](b) In the electronic "still" camera according [a selection process, next drawing 9] to the mode of the 2nd operation, It is a flow chart for explaining operation of the selection process as which a user is made which of the flash memory 8a or the elimination improper memory 8b, or to choose whether it uses, and the program

shown with this flow chart is stored in ROM11. First, if it judges whether the memory selection key of the key input section 9 was operated, and the memory selection key is not operated at Step S50, it progresses to the processing corresponding to other keys processed or operated and a memory selection key is operated, it will progress to Step S52.

[0038]A user chooses the elimination improper memory 8b, when rewriting the image which chose and photoed the flash memory 8a when the photoed image was made rewritable and it is improper. In Step S52, when it judges whether the flash memory 8a was chosen and the flash memory 8a is chosen, as shown in drawing 10, the flag F4 which shows the selected memory is set to "0 (flash memory)" at Step S54.

[0039]On the other hand, when the elimination improper memory 8b is chosen, it is judged by progressing to Step S56 and referring to the flag F3 whether it is equipped with the elimination improper memory 8b. And if equipped with the elimination improper memory 8b (i.e., if the flag F3 "1" becomes), it will progress to Step S58, and as shown in drawing 10, the flag F4 which shows the selected memory will be set to "1 (elimination improper memory)".

[0040]If the flag F3 "0" Becomes if not equipped with the elimination improper memory 8b namely, it will progress to Step S60, and will indicate that it has not equipped LCD16 with the elimination improper memory 8b, and the above-mentioned flag F4 will be set to "0 (flash memory 8a)" at Step S62.

[0041](c) Image recording processing, next drawing 11 are the flow charts for explaining image recording processing of the electronic "still" camera by the mode of the 2nd operation, and the program shown with this flow chart is stored in ROM11. First, after adding a synchronized signal etc. to the image data which incorporated the image photoed by CCD1 at Step S70, and was incorporated from SG15 at Step S72, creating a digital video signal and changing into an analog signal with D/A converter 17, it displays by LCD16. And if it judges whether the shutter key 9a of the key input section 9 was pressed and is not pushed at Step S74, it returns to Step S70. Therefore, the image photoed by CCD1 will be displayed on LCD9 by predetermined sampling timing (real time).

[0042]On the other hand, in the above-mentioned process, a push on the shutter key 9a will judge whether whether the flag F4 which shows the memory followed and chosen as Step S76 being "0", and the flash memory 8a are chosen. And when the flash memory 8a is chosen. When it progresses to Step S80 and the shutter key 9a is pressed, once storing in DRAM6 the image data which TG4 outputs, it compresses by compression / extension part 7, and stores in the flash memory 8a in the memory with which it is equipped, and this case according to the present writing address. Next, at Step S82, a writing address is updated and it returns to Step S70.

[0043]On the other hand, when the flag F4 is "1" (i.e., when the elimination improper memory 8b is chosen), it progresses to Step S78 and it is judged whether the memory area shown with the present writing address is empty area. And if this memory area is empty area, i.e., the area where image data has not been recorded yet, when it will progress to Step S80 mentioned above and the shutter key 9a will be pressed, Once storing in DRAM6 the image data which TG4 outputs, it compresses by compression / extension part 7, and stores in the elimination improper memory 8b in the memory with which it is equipped, and this case according to the present writing address. Next, at Step S82, a writing address is updated and it returns to Step S70.

[0044]The memory area which the memory chosen is the elimination improper memory 8b, and is shown with the present writing address not empty area but when image data is already recorded, It returns to Step S70, without displaying the message of the purport that it cannot write in on LCD16, and recording image data at Step S84.

[0045]Hereafter, the image photoed by CCD1 is recorded on the memory chosen as image data by carrying out repeat execution of Steps S70-S84. When the memory chosen is the flash memory 8a at this time, new image data is recorded on that memory area irrespective of whether image data is already recorded on the memory area shown by a writing address. On the other hand, when the memory chosen is the elimination improper memory 8b, even if it is going to record new image data on the memory area where image data is already recorded, it writes in and refuses as improper.

[0046]Thus, the recorded image data can make elimination improper, without needing complicated operation, since elimination and overwrite of image data which were already recorded are forbidden when [which was mentioned above] the elimination improper memory 8b is chosen in the mode of the 2nd operation. When the elimination improper memory 8b cannot eliminate by hardware, The recorded image data can make elimination improper, without performing special processing, since the access itself will be refused if it is newly going to store image data in the address with which image data was already stored like the mode of the 1st operation. What is necessary is to remove the elimination improper memory 8b and just to equip with a new thing, if an

availability is lost in the elimination improper memory 8b.

[0047]C. Explain the mode of the 3rd operation, next the mode of operation of the 3rd of this invention.

C-1. The lineblock diagram 12 of the mode of the 3rd operation is a block diagram showing the composition of the electronic "still" camera by the mode of the 3rd operation. The same numerals are attached to the portion corresponding to drawing 1, and explanation is omitted. In a figure, have established permanently only the rewritable flash memory 8a in the mode of the 3rd operation, and to this flash memory 8a. While the image data (a luminance signal and a chrominance signal) compressed by compression / extension part 7 is stored, as shown in drawing 13, the address with which image data is stored in every image data (storage area), and elimination good / improper information WE which shows whether it is improper whether elimination is good are stored. Elimination good / improper information WE is in the state where image data is not stored, and once it is set to "0" and image data is stored, it will serve as an elimination failure "1." And in the state where elimination good / improper information WE serves as an elimination failure "1", image data cannot newly be stored (overwrite). However, by processing mentioned later, this elimination good / improper information WE can be referred to as "0" in entering a password, and can cancel an elimination failure now.

[0048]C-2. Explain operation of the mode of the 3rd operation, next the operation of the mode of the 3rd operation mentioned above.

(a) Image recording processing drawing 14 is a flow chart for explaining image recording processing of the electronic "still" camera by the mode of the 3rd operation, and the program shown with this flow chart is stored in ROM11. First, the image photoed by CCD1 is incorporated at Step S90, and at Step S92, a synchronized signal etc. are added to the image data incorporated from SG15, a digital video signal is created, and it displays by LCD16. And if it judges whether the shutter key 9a of the key input section 9 was pressed and is not pushed at Step S94, it returns to Step S90. Therefore, the image photoed by CCD1 will be displayed on LCD9 by predetermined sampling timing (real time).

[0049]On the other hand, in the above-mentioned process, if the shutter key 9a is pressed, it will progress to Step S96. It is judged whether it is good (overwrite is possible) in whether elimination good / improper information WE corresponding to the storage area of the image data shown with the present writing address that it corresponds with reference to the header unit of the flash memory 8a is "0", and elimination. And when elimination good / improper information WE is "0." When it progresses to Step S98 and the shutter key 9a is pressed, once storing in DRAM6 the image data which TG4 outputs, it compresses by compression / extension part 7, and stores in the flash memory 8a according to the present writing address. Next, at Step S100, it supposes that it is impossible, "1", i.e., elimination, of elimination good / improper information WE that it corresponds, and by Step S102, a writing address is updated and it returns to Step S90.

[0050]On the other hand, if it puts in another way when elimination good / improper information WE is "1" (i.e., when the storage area (image data) of the image data shown with the present writing address is set up improper [elimination]), When image data is already stored, it progresses to Step S104, and after displaying the message which writes in LCD16 and tells an improper purport, it returns to Step S90. Therefore, the image data already stored in this case is not rewritten.

[0051]In the reproduction mode which displays the image data stored in the flash memory 8a on LCD16, If the "--" key which functions as an instruction key for retreating "+" which functions as an instruction key for advancing one recorded image data, or one recorded image data is pressed, according to the picture data address of a header unit, image data will be sent (attitude) and it will display by LCD16. Here, drawing 15 is a key map showing the display example at the time of reproduction of image data. In the figure, the number given to the upper right corner of each image data is a number of image data, and it is shown that "WP" is image data set up improper [elimination of the image data] ("1"). Namely, "2", "4", "6" ... The image data of "n" is set up improper [elimination].

[0052](b) In the mode of the 3rd operation, release processing drawing 16 by entering a password to the already stored image data, Elimination good / elimination improper information WE is called off, and elimination being good (writing's is possible) and the program which is the flow charts for explaining the release processing to carry out, and is shown with this flow chart are stored in ROM11. First, it is judged at Step S110 whether the "+" key is pushed on the power up. Here, if "+" or the "--" key is pressed, it will progress to Step S112, image data will be sent according to the picture data address of a header unit (attitude), and it will display at Step S114 LCD16. As mentioned above, image data is displayed on LCD16 as "WP" in which it is shown that it is the image data set up improper [elimination] ("1").

[0053]Next, it is judged at Step S116 whether the user entered the password from the key input section 9. And

if a password is not entered, it returns to Step S110. A user presses "+" and the "−" key and makes image data move until the image data which wants to cancel setting out of not being eliminable is displayed. And a display of predetermined image data will enter a password. If a password is entered, will progress to Step S118 and the password set up beforehand will be read from RAM12 (or flash memory 8a). It judges whether the entered password and the password set up beforehand are in agreement, and if not in agreement, it returns to Step S110 as it is. Therefore, setting out to the image data currently displayed on LCD16 in this case which is not eliminable is not canceled.

[0054]On the other hand, if both passwords are in agreement, it will suppose that it is possible, "0", i.e., elimination, of elimination good / improper information WE on the image data which progresses and corresponds to Step S120, and will return to Step S110. Therefore, setting out to the image data currently displayed on LCD16 in this case which is not eliminable can be canceled, and the newly photoed image data can be stored now.

[0055]Thus, in the mode of the 3rd operation mentioned above. In every image data (storage area), elimination good / improper information WE which shows whether elimination is good or elimination is improper is formed so that setting out is possible. Since it supposes that elimination of elimination good / improper information WE that it corresponds is impossible and elimination (overwrite) was refused after that once it stored image data, the stored image data can be protected. When the password set up beforehand is entered, Since elimination good / improper information WE corresponding to image data present on display is called off and it was made to consider it as elimination C (overwrite). For example, it can be used as it is, without making useless hardware resources (flash memory 8b), even when the protected image data is transmitted and image data becomes unnecessary.

[0056]Although it communicated with infrared rays among both electronic "still" cameras and image data was transmitted, it may be made to transmit via a communication line in picture transmitting processing in the mode of the operation mentioned above not only with this but with a cable, radio, or a modem.

[0057]D. Explain the mode of the 4th operation, next the mode of operation of the 4th of this invention.

D-1. The lineblock diagram 17 of the mode of the 4th operation is a block diagram showing the electronic camera system by the mode of operation of the 4th of this invention. In the figure, the electronic camera 21 has composition almost equivalent to what was explained to drawing 12. The electronic camera 21 has a predetermined communications protocol, may carry out direct continuation to the communication line 22, and may be connected via the personal computer (PC) 23. The electronic camera 21 and 21 comrades may be connected in infrared-ray-communication 24 grade. When the provider 25 connects with the communication line 22, various services about transmission of a picture can be offered.

[0058]D-2. Explain operation of the mode of the 4th operation, next the operation of the mode of the 4th operation mentioned above. Drawing 18 and drawing 19 are the flow charts explaining operation of the mode of the 4th operation. Imaging mode, reproduction mode, and edit mode are prepared for the electronic camera 21 by the mode of the 4th operation. First, mode discrimination is made by Step S201. When distinguished from imaging mode, it progresses to Step S202.

[0059](a) In the mode of operation of the photographing mode 4th, it has two-step composition, and it is PURISHATTA (half press of the shutter key 9a), and the shutter key 9a performs processing of predetermined [such as auto-focusing,], for example, and records a picture by this shutter aggressiveness. By Step S202 and the loop of S203, the image picturized from CCD1 is captured into DRAM6 after performing predetermined image processing, and the monitor display is performed to LCD16 as a viewfinder until PURISHATTA is pushed. If PURISHATTA aggressiveness is detected at Step S202, it will progress to Step S204.

[0060]In Step S204, it is judged whether it is in change improper mode. In the mode of the 4th operation, the mode picturized as change of an image pick being impossible and the mode picturized as edit being possible can be changed and chosen. When set as the change improper mode, it progresses to Step S205 and an alarm display is performed. Since the picture which picturized this warning in the change improper mode cannot perform edit and rewriting, it is a warning message to which judgment of being the image pick-up O.K. is urged in that state. It can be designed suitably whether elimination of the picture picturized in the change improper mode is forbidden or elimination is made possible.

[0061]Next, in Step S206, auto-focusing and predetermined processing which should be processed before this shutter aggressiveness are performed, for example, and it is judged whether this shutter was pushed at Step S207. And if the loop of Steps S202-S207 is repeated and this shutter aggressiveness is detected at Step S207 until this shutter is pushed, it will progress to Step S208.

[0062]Here, it judges whether it is in change improper mode again, and if it is not in change improper mode, it will progress to Step S209 and the usual image pick-up processing will be performed. That is, compression / extension part 7 performs predetermined compression processing, and the picture captured into DRAM6 is written in the flash memory 8a. If it is in change improper mode, at Step S210, predetermined processing mentioned later will be performed, a picture will be made unchangeable, and it will write in the flash memory 8a. It does not write in, when it distinguishes whether the change improper flag mentioned later is given to the existing image data when overwriting the existing image data memorized by the flash memory 8a at this time, and the change improper flag is given. It may be made to display the message for notifying a user of it being unchangeable at this time. The existing image data which cannot change and is memorized by this can be prevented from being changed (overwrite). And it progresses to Step S211, key detection of a mode change etc. is performed, and it returns to Step S201.

[0063]Next, the details of the above-mentioned step S210 for memorizing as change of a picture being impossible are explained with reference to drawing 19. In Step S221, a picture and a change improper flag are matched and it once memorizes in DRAM6. A change improper flag is a specific code generated or it memorizes in the main part of the electronic camera 21. And at Step S222, the picture is made together with a change improper flag, and it enciphers. Although RSA etc. are known variously, since the existing enciphering method can be used for the technique of encryption by this invention, explanation is omitted.

[0064]As shown in drawing 21 (a) and (b), the technique of mixing a picture and a change improper flag may only be added to the beginning of a picture, or the last, and as shown in drawing 21 (c), it may be added in two dimensions. As shown in drawing 22, it may compound so that a picture and a change improper flag may be piled up. The same pixel number as a picture may be sufficient as the change improper flag in this case, and a different pixel number is also available for it.

[0065]On the other hand, digital watermarking is known although it differs from encryption for a while. The outline is shown in drawing 23. Predetermined text information is embedded at a source image, and it is memorized to the flash memory 8a at Step S223. Although a source image here is a picture which mixed the change improper flag, it is good also considering the picture before mixing a change improper flag as a source image. Although the text information embedded gives the simple example here, it may be more complicated and picture information may be sufficient as it. A change improper flag can be embedded and it can also adopt as text information. as art of digital watermarking, there are U.S. patent application USP5,530,859, USP5,636,292, USP5,568,570, international patent application WO96-36163 and WO96-27259, and WO95-14289 grade, for example. Since the existing electronic watermark method is employable in this invention, explanation is omitted.

[0066](b) Explain reproduction mode, next reproductive operation with reference to drawing 24. If it is set as reproduction mode by operation of the key input section 9, a picture will be specified by a certain method by Step S231. This specification is good also as a picture picturized at the end, and may be specified by a number etc. And if it judges whether the specified picture is enciphered and is not enciphered at Step S232, repeat display processing is performed as it is at Step S234. On the other hand, if enciphered, after decoding, it will express as Step S233. When digital watermarking is embedded, it dissociates within Step S233. The method of leaving as it is and reproducing text information may be sufficient as the picture where, as for this separation, text information was embedded, and the method of removing text information thoroughly may be sufficient as it.

[0067]And display processing of the picture decoded at Step S234 is performed. Since it is always enciphered, the picture made impossible [change] is not reproduced with the image processing device etc. which do not have a decipherment function. And it is designed perform only the output of built-in LCD16, and the video output has come to be unable to perform an analog output and a digital output in display processing of this step S234. It is because it may be received and changed with another image processing device etc. if a video output is carried out.

[0068](c) a transmitting mode -- here explains operation of the picture transmission by the means of communication of the electronic camera 21 with reference to drawing 25. Since Step S240, S241, and S242 are the same as that of Step S231 shown in drawing 24, S232, and S233, they omit explanation. If the specified picture is changeable, it will transmit as it is at Step S243. On the other hand, if the specified picture is unchangeable, the message which shows that it cannot transmit at Step S244 will be displayed.

[0069]Thus, the picture which is set up improper [change] in the picture transmission by the means of communication of the electronic camera 21 of the mode of the 4th operation is designed not transmit. Also when carrying out collective sending of all the pictures memorized by the flash memory 8a, only the picture which is not set up improper [change] is transmitted selectively. Therefore, it is received by another image

processing device etc. and can prevent seeing or being changed.

[0070](d) Explain edit mode, next operation of edit with reference to drawing 26. Since Step S251, S252, and S253 are the same as that of Step S231 shown in drawing 24, S232, and S233, they omit explanation. The point of difference with reproduction is a point which can change and re-write in a picture by edit to only seeing a picture in reproduction. That is, the specified picture distinguishes whether it is set up improper [change] at Step S254. If change is good, repeat display processing will be performed like Step S234 of drawing 24 at Step S255. And after performing editing processing at Step S256, the picture after edit is written in the flash memory 8a at Step S257. Therefore, a picture will be changed. Since the editing processing itself is publicly known, explanation is omitted. On the other hand, if judged with change being impossible at Step S254, at Step S258, a message [that it cannot edit] will be displayed and it will return to a step. Therefore, a picture is not changed.

[0071]

[Effect of the Invention] Since the image photoed by said photographing device was memorized as image data by the storage control means to either one of said 1st memory measure or said 2nd memory measure according to the invention according to claim 1, The advantage that the photoed image as it is can memorize as image data in the 2nd memory measure is acquired.

[0072] Since according to the invention according to claim 2 said 1st memory measure and the 2nd memory measure are made removable and it was equipped with either at once, to the 2nd memory measure. While the photoed image as it is can memorize as image data, to memorize the photoed image data so that rewriting is possible. It equips with the 1st memory measure and the photoed image data is rewritten, and the advantage that a photograph can be taken by both of the methods by equipping with the 2nd memory measure according to the purpose is acquired for it to be improper and memorize.

[0073] According to the invention according to claim 3, by a selecting means, choose as which of said 1st memory measure or said 2nd memory measure whether image data is memorized, and said storage control means, Since the image photoed by said photographing device was memorized as image data to the memory measure with said selected selecting means, to the 2nd memory measure. While the photoed image as it is can memorize as image data, to memorize the photoed image data so that rewriting is possible. The 1st memory measure is chosen, the photoed image data is rewritten, and the advantage that a photograph can be taken by both of the methods only by choosing the 2nd memory measure according to the purpose is acquired for it to be improper and memorize.

[0074] Since the identification information which answers operation of a directing means and shows that it is unchangeable in a picture to an image pick is added and memorized according to the invention according to claim 4, the advantage that it can prevent changing the photoed picture later is acquired. Since the picture set up improper [change] is enciphered and memorized with identification information according to the invention according to claim 5, Since it is undecipherable without a decoding means, and identification information is also decoded and recognized when there is a decoding means and it decodes, change can be prevented by that cause, and when it is going to reproduce with devices other than the electronic camera picturized especially, the advantage of being effective is acquired.

[0075] Since predetermined information is embedded in the picture set up improper [change] according to the invention according to claim 6, Since it is undecipherable without the separating mechanism which separates predetermined information, and identification information is also recognized when there is separating mechanism and it decodes, change can be prevented by that cause, and when it is going to reproduce with devices other than the electronic camera picturized especially, the advantage of being effective is acquired. According to the invention according to claim 7, if a photography person picturizes while monitoring the reproduction means as a finder toward a photographic subject, the advantage that it can recognize that change becomes impossible as for the picture will be acquired. According to the invention according to claim 8, before a photography person pushes a shutter, if it picturizes, the advantage that it can recognize that change becomes impossible as for the picture will be acquired.

[0076] According to the invention according to claim 9, the advantage that two or more memory measures can be used, or the memory measure removed from the main part of an electronic camera can be used with other electronic camera and other devices is acquired. According to the invention according to claim 10, the advantage that it can be chosen whether the picture picturized according to a situation is made into what can be edited later, or it is supposed that change is impossible is acquired. According to the invention according to claim 11, since the picture which cannot be edited at the time of edit is not displayed and only the picture which can be edited is reproduced, the advantage that it is intelligible is acquired. According to the invention according

to claim 12, the advantage that the photoed picture can be transmitted to other electronic camera and other devices via a means of communication is acquired.

[0077]According to the invention according to claim 13, the advantage that shutter operation can be performed is acquired from other information machines and equipment and other electronic cameras. According to the invention according to claim 14, in the electronic camera system which consists of the electronic camera and means of communication which were connected via the communication line, and information machines and equipment, the advantage that it can prevent changing the photoed picture later is acquired. According to the invention according to claim 15, the advantage that the picture set up improper [change] is unchangeable by a receiver even if it exchanges a picture via a communication line is acquired. According to the invention according to claim 16, the advantage that it is memorizable in the state [that an imaging means cannot be controlled and the picturized picture cannot be changed] is acquired by making a program code read into a computer and executing it.

[Translation done.]

* NOTICES *

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- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a block diagram showing the composition of the electronic "still" camera by the mode of 1 operation of this invention.

[Drawing 2]It is a flow chart for explaining operation of the memory detection processing of an electronic "still" camera.

[Drawing 3]It is a key map for explaining memory detection processing.

[Drawing 4]It is a key map for explaining memory detection processing.

[Drawing 5]It is a flow chart for explaining image recording processing of the electronic "still" camera by the mode of the 1st operation.

[Drawing 6]It is a block diagram showing the composition of the electronic "still" camera by the mode of the 2nd operation.

[Drawing 7]It is a flow chart for explaining operation of the processing which detects whether it is equipped with the elimination improper memory by the mode of the 2nd operation.

[Drawing 8]In the electronic "still" camera by the mode of the 2nd operation, it is a key map for explaining the flag which shows whether it is equipped with the elimination improper memory.

[Drawing 9]In the electronic "still" camera by the mode of the 2nd operation, it is a flow chart for explaining operation of the selection process as which a user is made to choose whether either a flash memory or an elimination improper memory is used.

[Drawing 10]In the electronic "still" camera by the mode of the 2nd operation, it is a key map for explaining the flag which shows a memory with the selected user.

[Drawing 11]It is a flow chart for explaining image recording processing of the electronic "still" camera by the mode of the 2nd operation.

[Drawing 12]It is a block diagram showing the composition of the electronic "still" camera by the mode of the 3rd operation.

[Drawing 13]In the electronic "still" camera by the mode of the 3rd operation, it is a key map for explaining the information stored in the flash memory.

[Drawing 14] It is a flow chart for explaining image recording processing of the electronic "still" camera by the mode of the 3rd operation.

[Drawing 15] It is a key map showing the display example at the time of reproduction of image data.

[Drawing 16] In the mode of the 3rd operation, they are that elimination is good (writing is possible) and a flow chart for explaining the release processing to carry out by entering a password.

[Drawing 17] It is a block diagram showing the electronic camera system by the mode of operation of the 4th of this invention.

[Drawing 18] It is a flow chart for explaining the photographing mode operation (1/3) by the mode of the 4th operation.

[Drawing 19] It is a flow chart for explaining the photographing mode operation (2/3) by the mode of the 4th operation.

[Drawing 20] It is a flow chart for explaining the photographing mode operation (3/3) by the mode of the 4th operation.

[Drawing 21] It is a key map for explaining the additional means of the change improper flag in the case of making image data unchangeable.

[Drawing 22] It is a key map for explaining the additional means of the change improper flag in the case of making image data unchangeable.

[Drawing 23] It is a key map at the time of using digital watermarking.

[Drawing 24] It is a flow chart for explaining the reproduction mode operation by the mode of the 4th operation.

[Drawing 25] It is a flow chart for explaining the transmitting-mode operation by the mode of the 4th operation.

[Drawing 26] It is a flow chart for explaining the edit mode operation by the mode of the 4th operation.

[Description of Notations]

1 CCD (photographing device)

3 A/D converter

4 TG

5 Drive circuit

6 DRAM

7 Compression/extension part

8a Flash memory (the 1st memory measure, a memory measure)

8b Elimination improper memory (the 2nd memory measure)

9 Key input section (a selecting means, input means)

9a Shutter key (directing means)

10 CPU (a storage control means, a rewriting improper setting-out means, a decision means, a switching means, a control means, an encoding means, a decoding means, an embedding means, separating mechanism, warning means)

11 ROM (a storage control means, a rewriting improper setting-out means, a control means, an encoding means, a decoding means, an embedding means, separating mechanism, warning means)

12 RAM

13 I/O Port (means of communication)

15 SG

16 LCD (a displaying means, warning means)

20 Connector (detection means)

21 Selection circuitry

[Translation done.]

* NOTICES *

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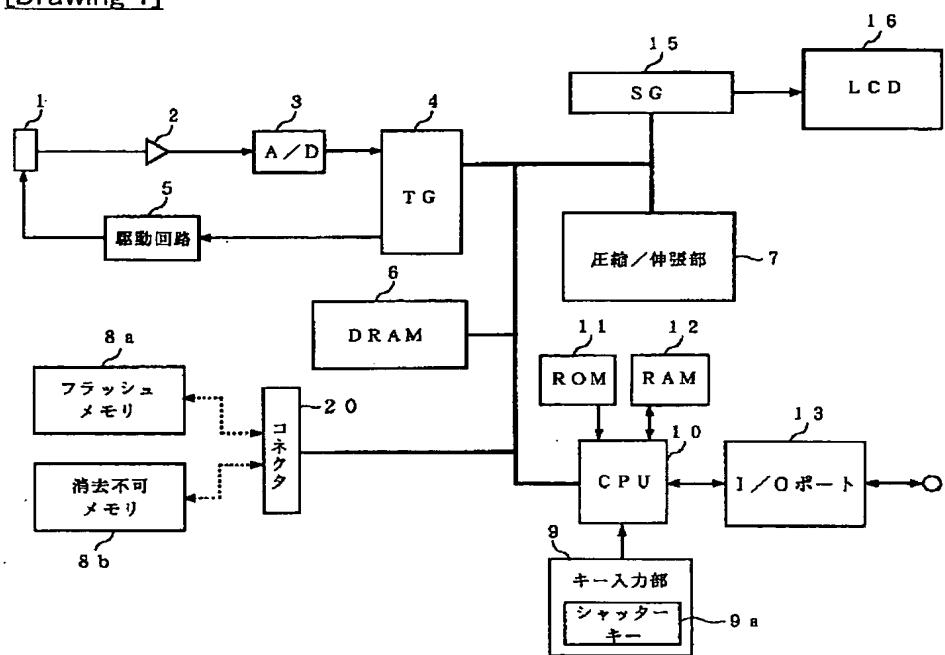
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2. **** shows the word which can not be translated.

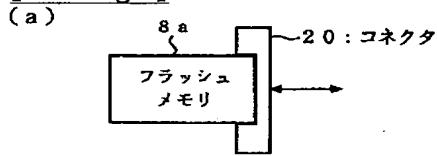
3.In the drawings, any words are not translated.

DRAWINGS

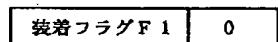
[Drawing 1]



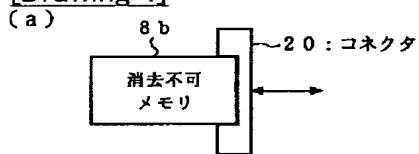
[Drawing 3]



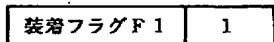
(b)



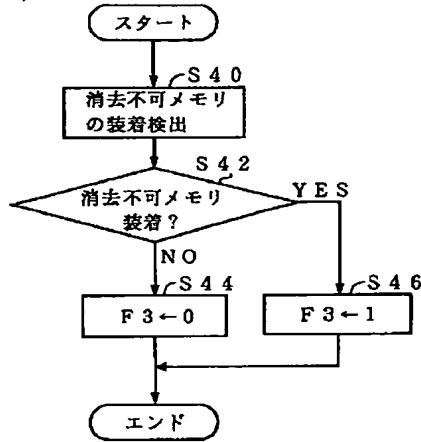
[Drawing 4]



(b)



[Drawing 7]



[Drawing 8]

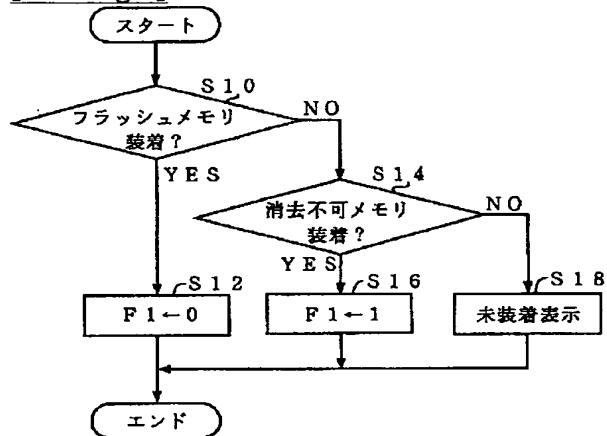
フラッシュメモリ (F2)	1
消去不可メモリ (F3)	0 / 1

0 : なし
1 : あり

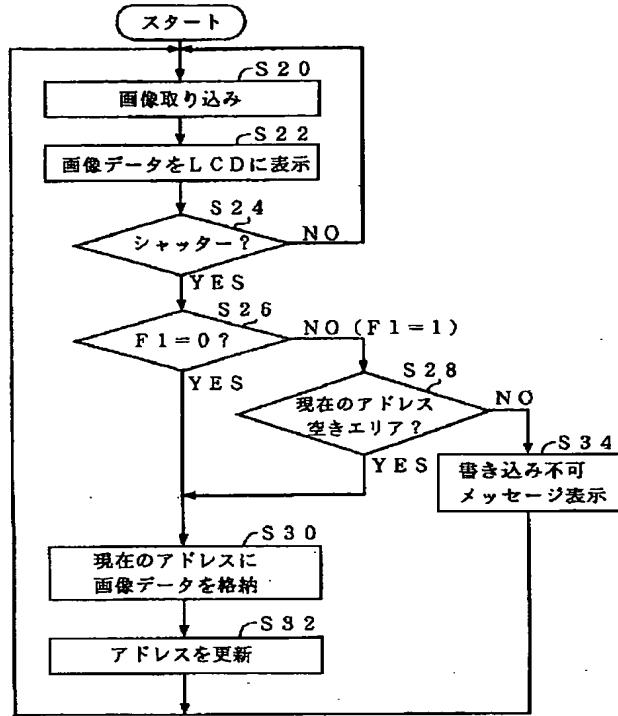
[Drawing 10]

選択メモリ (F4)	0 / 1
	0 : フラッシュメモリ 1 : 消去不可メモリ

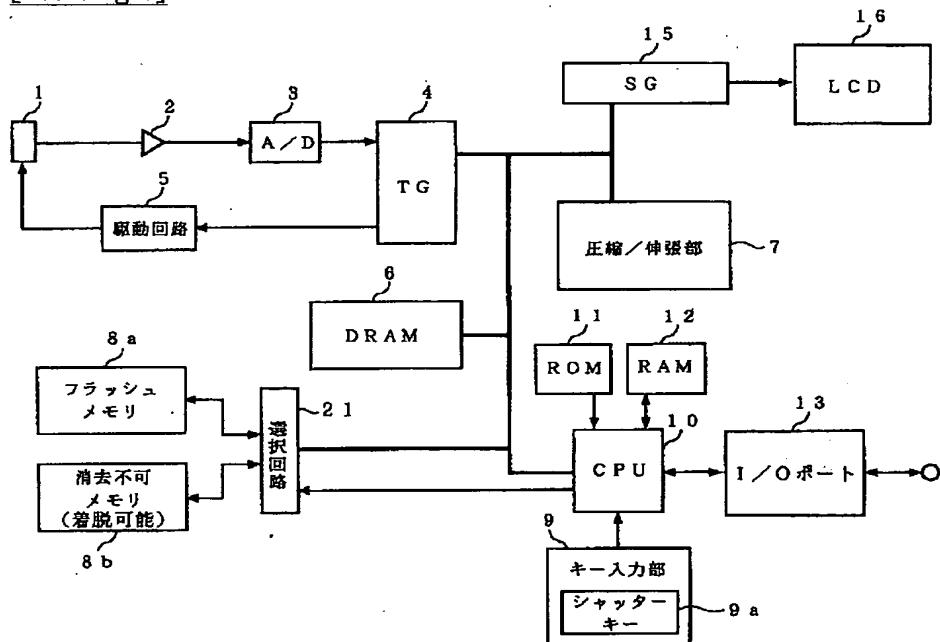
[Drawing 2]



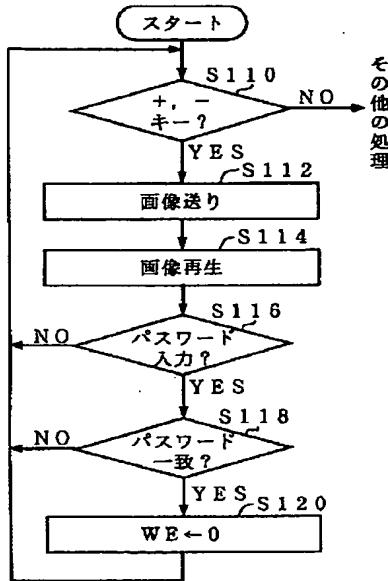
[Drawing 5]



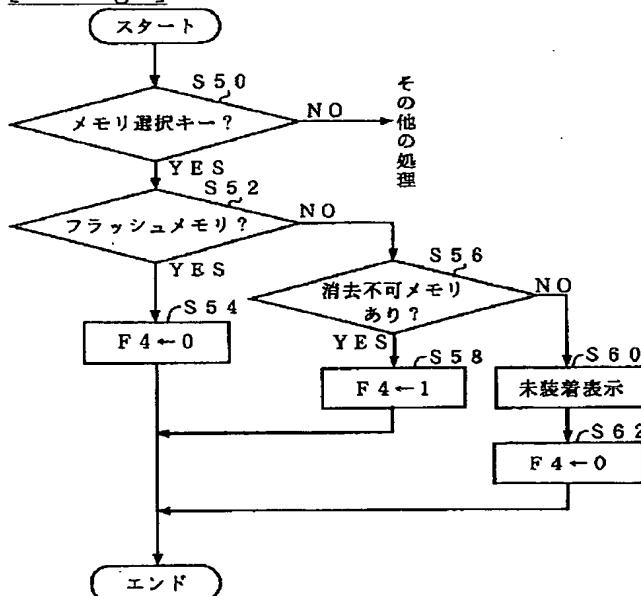
[Drawing 6]



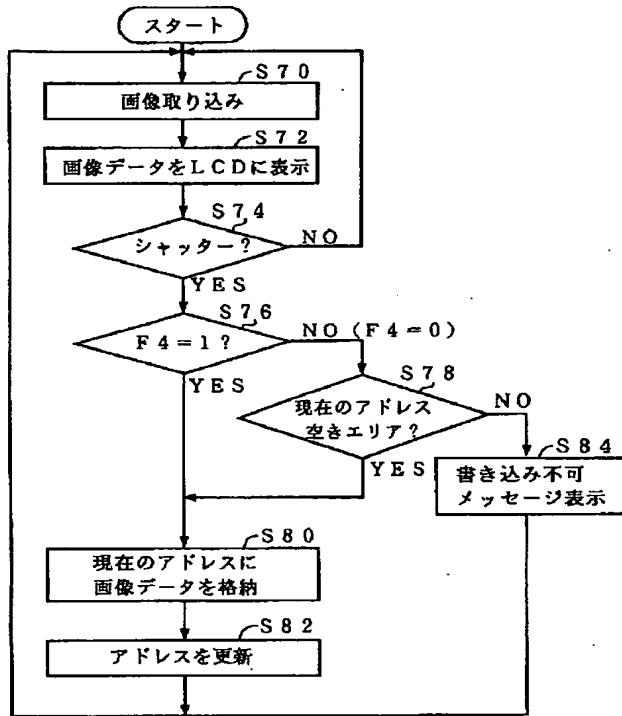
[Drawing 16]



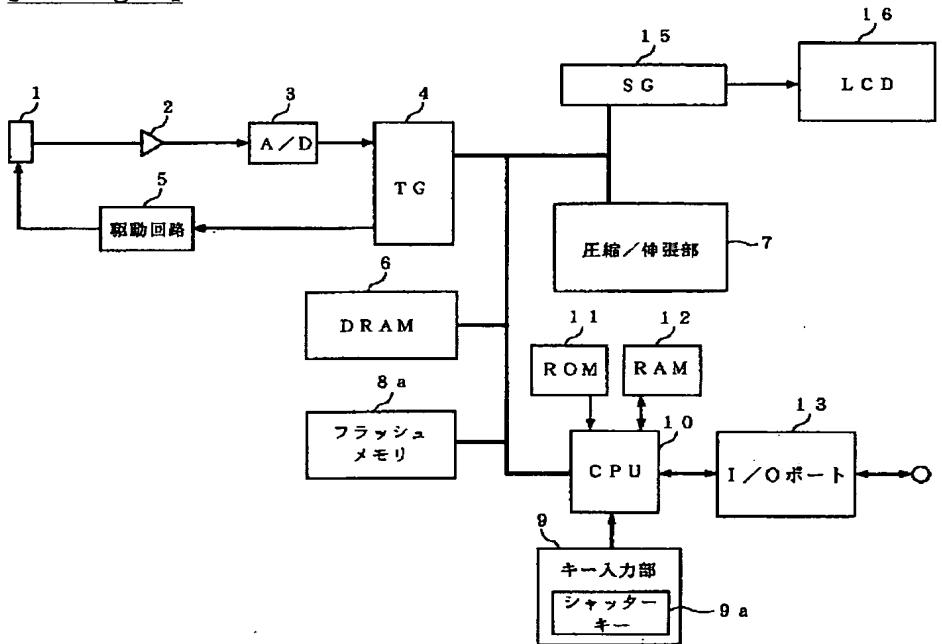
[Drawing 9]



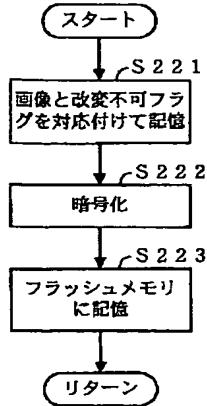
[Drawing 11]



[Drawing 12]



[Drawing 20]

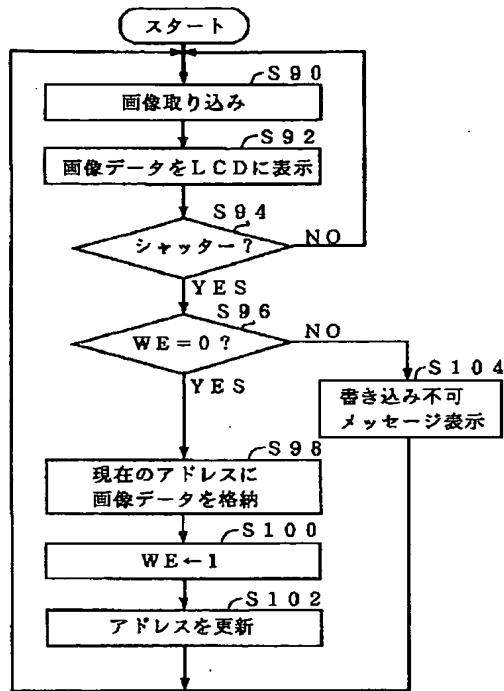


[Drawing 13]

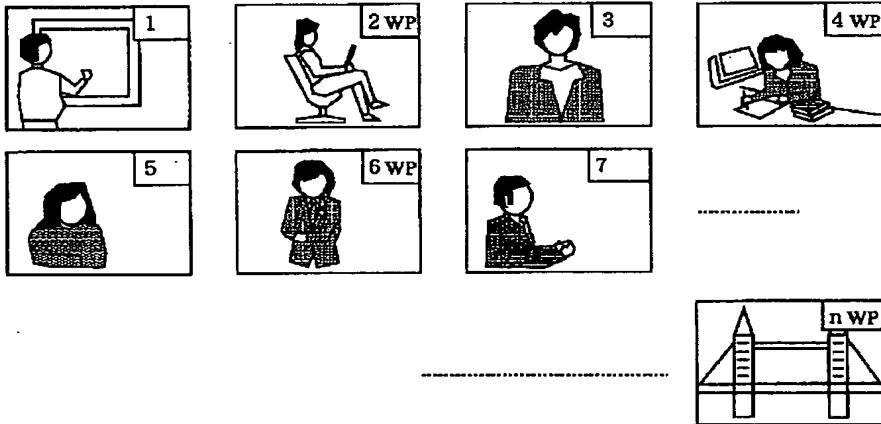
1枚目の画像データ	画像データアドレス
	消去可／不可情報
2枚目の画像データ	画像データアドレス
	消去可／不可情報
3枚目の画像データ	画像データアドレス
	消去可／不可情報
⋮	
n枚目の画像データ	画像データアドレス
	消去可／不可情報

消去可／不可情報 : WE
 0 : 消去可
 1 : 消去不可

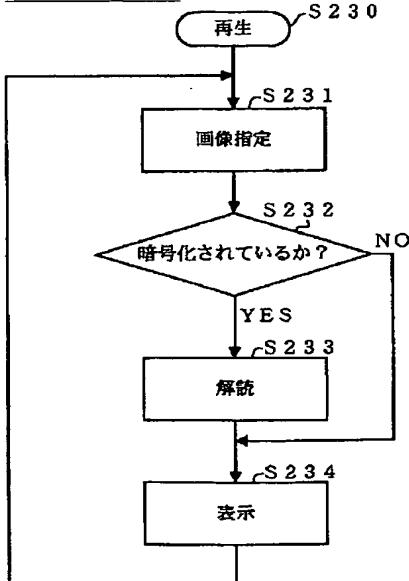
[Drawing 14]



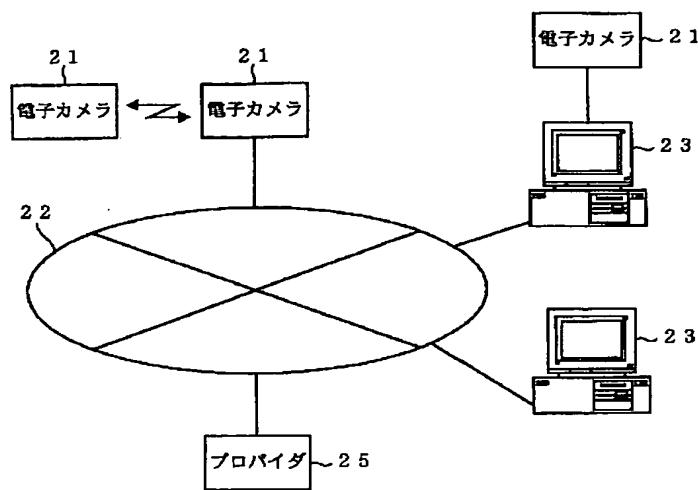
[Drawing 15]



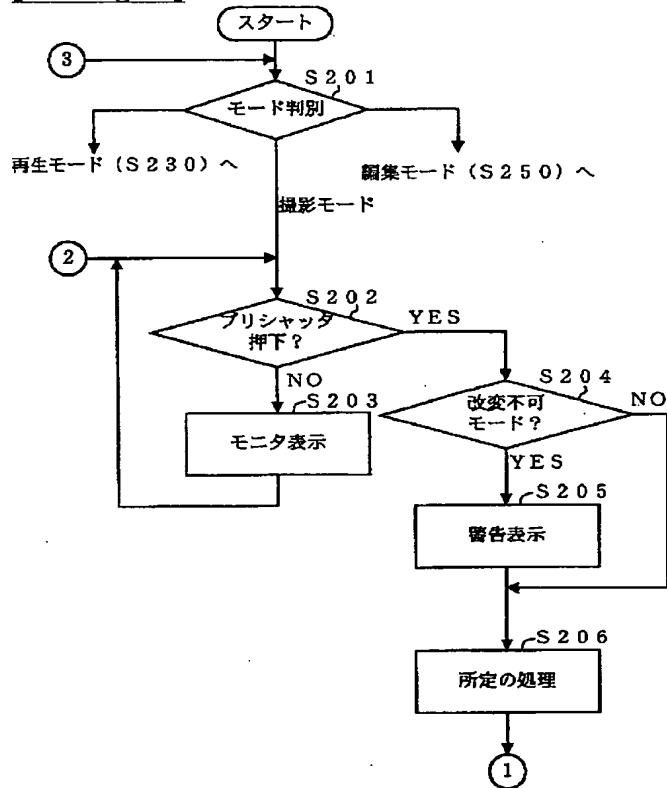
[Drawing 24]



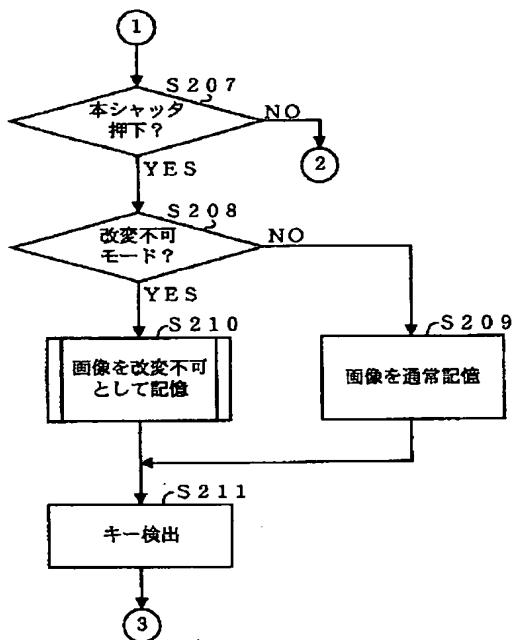
[Drawing 17]



[Drawing 18]



[Drawing 19]

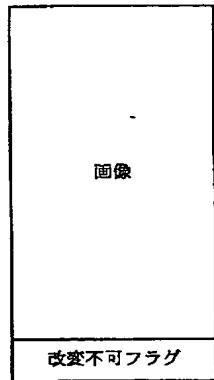


[Drawing 21]

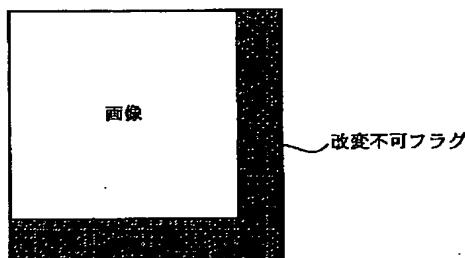
(a)



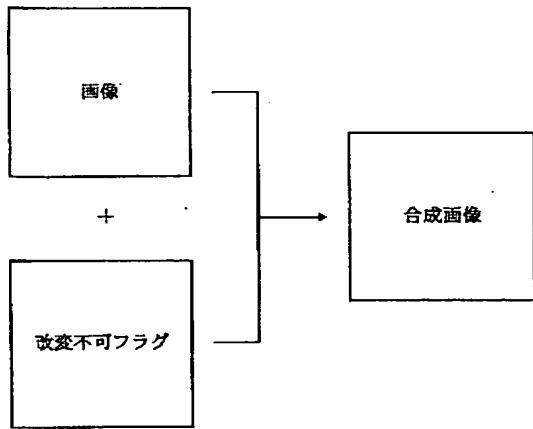
(b)



(c)

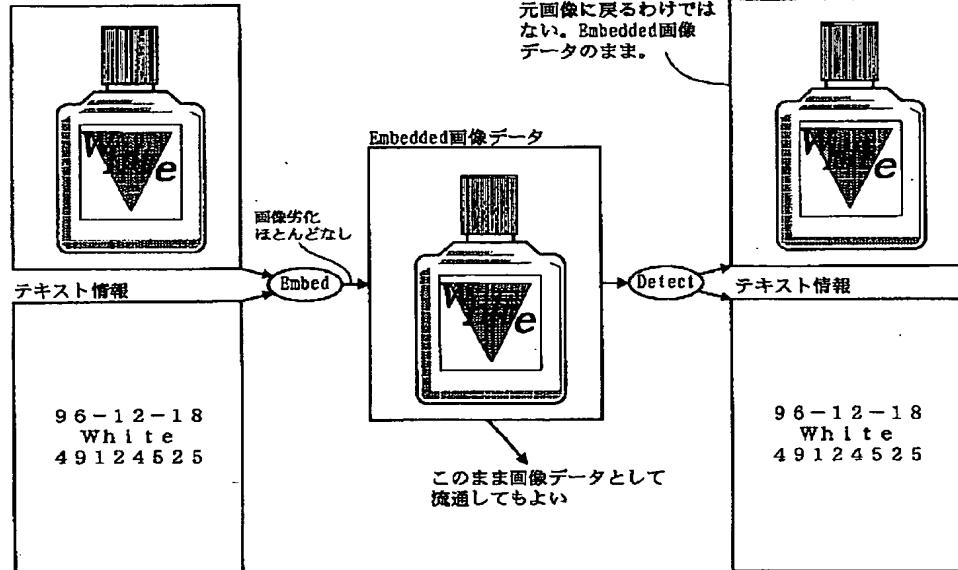


[Drawing 22]

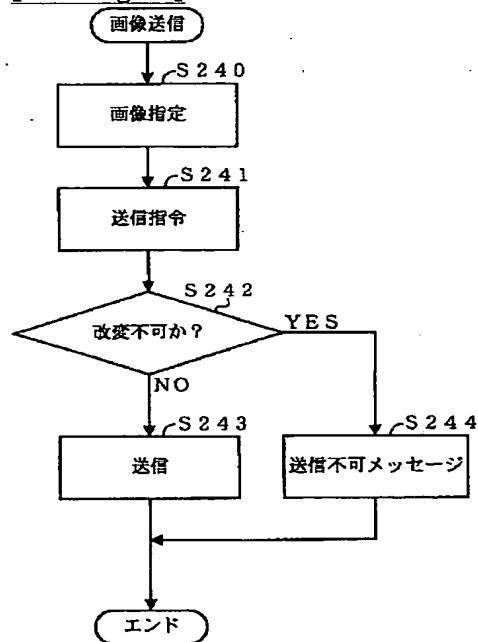


[Drawing 23]

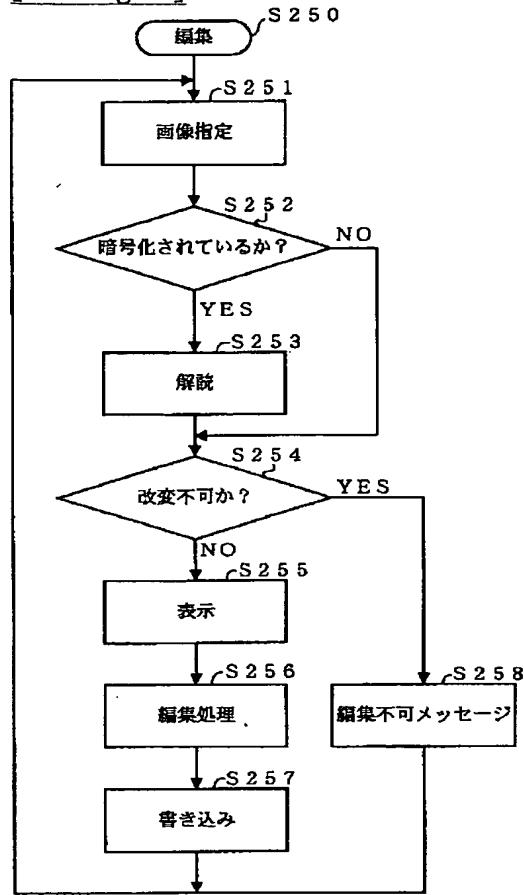
画像データ（元画像）



[Drawing 25]



[Drawing 26]



[Translation done.]

7 使用し、一旦格納した画像データをそのまま引きし、消去したり書ききりできなくなる場合、消去不可メモリ8 bを接続して使用するようになっている。

[0024] CPU10は、ROM11内のプログラム、および上記キー入力部9のスイッチの状態に従って各部の動作を制御する。特に、CPU10は、上述したDRAM6に一旦格納した画像データを、フラッシュメモリ8 bまたは消去不可メモリ8 bに格納する。また、図4 (a)に示すように、コネクタに書き込みアドレスで表示されるメモリが装着されない場合には、コネクタにフラッシュメモリ8 bが装着されていれば、ステップS12に進み、図3 (b)に示すように、再生キー、各種設定値を設定するスイッチ装着されているメモリの種類を示すフラグF1を「0」とする。

[0028]一方、フラッシュメモリ8 bが装着されない場合には、ステップS14に進み、消去不可メモリ8 bが装着されているか否かを判断する。そして、図4 (a)に示すように、コネクタに書き込みアドレスで表示されるメモリが装着されない場合には、上記フラグF1を「1」とする。また、図4 (b)に示すように、上記フラグF3を「1」とする。まず、ROM11は、半導体メモリ以外にも、磁気的、光学的記録媒体で構成された記憶媒体であってもよく、上記CPU10によって実行されるプログラムおよびデータを記憶している。既記憶媒体(ROM11)は、固定的に受けられたもの、もしくは電離自在に記録されたものである。また、記憶媒体(ROM11)に記録するプログラム、データ等は、通信回線等を介して接続された他の機器から受信して記憶する構成にてもよく、さらには、通信回線等を介して接続された他の機器側に上記記憶媒体(ROM11)を受け、既記憶媒体(ROM11)に記憶されているプログラム、データ等を通信回線を介して使用する構成にてもよい。

[0026]次に、12はRAM(ランダムアクセスメモリ)であり、上記CPU10のワーキングエリアとして用いられる。また、13は、シリアル信号に変換された映像信号等を入出力するインターフェースとして機能する1ノードポートであり、特に、本第1の実施の態様では、他の機器(例えば、電子スチルカラ、コンピュータ等)との間で、記録した画像データを授受する際に用いられる。次に、15はSG(Signal Generator)ビデオ信号発生器であり、圧縮/伸張部7により伸張された輝度信号等を重畳し、同期信号等を附加して、デジタルビデオ信号を作成し、LCD16へ出力する。LCD(液晶表示器)19はバッファ18を介して供給されるデジタルビデオ信号に対して、映像を表示する。

[0027] A-2. 第1の実施の態様の動作
次に、上述した第1の実施の態様による電子スチルカルメータの動作について説明する。なれば、以下の説明では、上述した消去不可メモリ8 bをソフトウェアにより消去(上書き)不可とした例について説明する。
(a) メモリ検出処理
図2は、上述した電子スチルカルメータのメモリ検出処理の動作を説明するためのフローチャートであり、該フローチャートで示されるプログラムはROM11に格納されている。また、図3および図4は、メモリ検出処理を説明するための概念図である。まず、ステップS10において、コネクタ20を介して接続されたメモリ(フラッシュメモリ8 b)が装着された時

8 点で、TG4が出力する画像データを一旦DRAM6に格納した後、圧縮/伸張部7により圧縮し、現在の書き込みアドレスに従って、書き替わるか否かを検出できるようになっている。

[0036] B-2. 第2の実施の態様の動作
次に、上述した第2の実施の態様の動作について説明する。

(a) 消去不可メモリ検出処理

図7は、上述した第2の実施の態様による電子スチルカルメータにおいて、消去不可メモリが装着されているか否かを検出する処理の動作を説明するためのフローチャートである。まず、該フローチャート10を検出する処理の動作を説明するためのフローチャートはROM11に格納されている。まず、ステップS4において、選択回路21を介して消去不可メモリ8 bの接続を検出し、ステップS42で、検出結果に基づいて消去不可メモリ8 bが装着されているか否かを判断する。そして、消去不可メモリ8 bが装着されていない場合には、ステップS44で、図8に示すように、装置/未接続を示すフラグF3を「0(未接続)」とし、消去不可メモリ8 bが装着されている場合には、ステップS46で、図8に示すように、装置/未接続を示すフラグF3を「1(接続)」とし、その結果によって示されるメモリがフラッシュメモリ8 bが装着されている場合は、ステップS48で、図8に示すように、上記フラグF3を「1(接続)」とする。なお、フラッシュメモリ8 bは、常設であるので、該メモリに対するフラグF2は「1」となる。

[0037] (b) 選択処理

次に、図9は、第2の実施の態様による電子スチルカルメータの書き込みアドレスによって示されるメモリ領域に既に画像データが記録されているか否かに拘らず、そのメモリ領域に新たな画像データを記録する一方、該記録されたメモリが消去不可メモリ8 bの場合には、既に画像データが記録されているメモリ領域に新たな画像データを記録しようとしても書き込み不可として拒否する。

[0038]

次に、図9は、第2の実施の態様で、既に書き込みアドレスによって示されるメモリ領域に既に画像データが記録されている場合に、既に該記録された画像データの消去と上書きが禁止されるので、複雑な操作を必要とすることなく、記録した画像データを消去不可とする。また、消去不可メモリ8 bがハードウェアにより消去不可となっている場合は、既に画像データが格納されたアドレスに新たに画像データを格納しようとすると、アクセスそのものが拒否されるので、特別な処理を行うことなく、記録した画像データを消去不可とする。なお、消去不可メモリ8 bに空き容量がなければ、消去不可メモリ8 bを新たなものとすればよい。

[0039]

次に、本発明の第2の実施の態様について説明する。B-1. 第2の実施の態様の構成
図6は、第2の実施の態様による電子スチルカルメータの構成を示すブロック図である。なお、図1に対応する部分には同一の符号を付けて説明を省略する。图において、本第2の実施の態様では、書き換え可能なフラッシュメモリ8 bを常設することで、消去不可メモリ8 bを暫脱自在に接続することができるようになっている。選択回路21は、CPU10からの指示により、フラッシュメモリ8 bまたは消去不可メモリ8 bが選択された場合には、ステップS56に進み、フラグF3を参照する

ことにより、消去不可メモリ8 bが装着されているか否かを判断する。そして、消去不可メモリ8 bが装着されていれば、すなわちフラグF3が「1」ならば、ステップS8に進み、図10に示すように、選択されたメモリを示すフラグF4を「1(消去不可メモリ)」とす。図2は、上述した電子スチルカルメータのメモリ検出処理の動作を説明するためのフローチャートであり、該フローチャートで示されるプログラムはROM11に格納されている。また、図3および図4は、メモリ検出処理を説明するための概念図である。まず、ステップS10において、コネクタ20を介して接続されたメモリ(フラッシュメモリ8 b)が装着された時

なければ、すなわちフラグF3が「0」ならば、ステップS60に進み、LCD16に消去不可メモリ8 bが未接続である旨を表示し、ステップS62で、上記フラグF4を「0」(フラッシュメモリ8 a)とする。

[0041] (c) 画像記録処理

次に、図11は、本第2の実施の態様による電子スチルカメラの画像記録処理を説明するためのフローチャートであり、該フローチャートで示されるプログラムはROM1に格納されている。まず、ステップS90で、CCDによって撮影された映像を取り込み、ステップS92で、SG1より、取り込んだ画像データに同期信号等を付加して、デジタルビデオ信号を作成し、LCD16 ROM1に格納されている。まず、ステップS110で、電源投入時に「+」キーが押下されているか否かを判断する。ここで、「+」または「-」キーが押下されていれば、ステップS90に戻る。したがって、LCD9には、所定のサンプリングタイミング(リアルタイム)で、CCD1により撮影された映像が表示されることになる。

[0049]一方、上記過程において、シャッターキー9 aが押下されると、LCD16で示される映像データが新規に新たに撮影された映像データと交換する。一方、選択されているメモリが記録されているか否かに応じて、各々の操作によって記録される。一方、選択されているメモリが記録された場合は、LCD9に表示される。また、選択された場合は、既に記録された映像データの消却や上書きが禁止されるので、複雑な操作を必要とすることなく、記録した映像データを消去不可能とする。また、消去不可メモリ8 bがハードウェアにより消去不可能となる場合には、第1の実施の態様と同様、既に画像データが格納されたアドレスに新たに画像データを格納しようとすると、アクセスそのものが拒否されるので、特別な処理を行うことなく、記録した画像データを消去不可能である。なお、消去不可メモリ8 bに空き容量がなくなれば、消去不可メモリ8 bを外し、新たなものを装着すればよい。

[0047] C. 第3の実施の態様

次に、本説明の第3の実施の態様について説明する。

C-1. 第3の実施の態様の構成

図12は、第3の実施の態様による電子スチルカメラの構成を示すブロック図である。なお、図1に応応する部分には同一の符号を付けて読みを省略する。図において、本第3の実施の態様では、書き換え可能なフラッシュメモリ8 aのみを常設しており、該フラッシュメモリ8 aには、圧縮／伸張部7により圧縮された画像データ(密度信号と色信号)が格納されるとともに、図13に示すように、画像データ(格納エリア)毎に、画像データが格納されているアドレス、および消去可であるか不可であるかを示す消去可／不可情報WEが格納されている。消去可／不可情報WEは、画像データが格納されない状態で、「0」となり、画像データが一旦格納されると、消去不可「1」となる。そして、消去可／不可情報WEが消去不可「1」となっている状態では、新たに画像データを格納(上書き)することができないようになっている。但し、消去可／不可情報WEは、後述する処理により、バソードを入力することで「0」とすることができるが可能であり、消去可を解除できるようになっている。

[0048] C-2. 第3の実施の態様の動作

次に、上述した第3の実施の態様の動作について説明する。

図14は、本第3の実施の態様による電子スチルカメラの画像記録処理を説明するためのフローチャートであ

り、該フローチャートで示されるプログラムはROM1に格納されている。まず、ステップS90で、CCDによって撮影された映像を取り込み、ステップS92で、SG1より、取り込んだ画像データに同期信号等を付加して、デジタルビデオ信号を作成し、LCD16 ROM1に格納されている。まず、ステップS110で、電源投入時に「+」キーが押下されているか否かを判断する。ここで、「+」または「-」キーが押下されると、LCD16に表示される。また、LCD16には、画像データが消去不可(「1」)と表示されている。

[0049]一方、上記過程において、シャッターキー9 aが押下されると、LCD16で示される映像データの格納エリアに対応する、ファッショニングモリ8 aのヘッド部を参照し、対応する消去可／不可情報WEが「0」であるか否かを判断する。そして、バソードが入力されなければ、ステップS110に戻る。ユーザーは、消去不可の設定を解除しない画像データが表示されるまで、「+」、「-」キーを押下し、画像データを廻退させる。そして、所定の画像データが表示されると、バソードを入力する。バソードが入力されると、バソードをRAM12(もしくはフラッシュメモリ8 a)から読み出し、入力されたバソードと予め設定されていたバソードが一致するか否かを判断する。一致しなければ、そのままステップS110に戻る。したがって、この場合、LCD16に表示されている。したがって、この場合に対する消去不可の設定は解除されない。

[0050]一方、上記過程において、シャッターキー9 aが押下されると、ステップS76に進み、選択されているメモリを示すフラグF4が「0」であるか否か、すなわち選択されているメモリ8 bが選択されているか否かを判断する。そして、該フラッシュメモリ8 aが選択されている場合には、ステップS80に進み、シャッターキー9 aが押下された時点で、TG4が作出する画像データを一旦DRAM6に格納した後、圧縮／伸張部7により圧縮し、現在の書き込みアドレスに從って、フランシュメモリ8 aに格納する。次に、ステップS100で、対応する消去可／不可情報WEを「1」、すなわち消去不可とし、ステップS102で、書き込みアドレスを更新し、ステップS90に戻る。

[0051]一方、消去可／不可情報WEが「1」の場合には、どちらかが表示される。即ち、該フラッシュメモリ8 aに書き込みアドレスで示される画像データの格納エリア(密度信号と色信号)が消去不可の設定され、新たに画像データが格納されると、既に画像データが格納されている。即ち、該フラッシュメモリ8 aには、圧縮／伸張部7により圧縮された画像データ(密度信号と色信号)が格納される。この場合、TG4が作出する画像データを一旦DRAM6に書き込み不可である旨を知らせるメッセージを表示した後、ステップS90に戻る。したがって、この場合、既に格納されている画像データは書き換えられることがない。

[0052] (b) 消除処理

図16は、本第3の実施の態様において、既に格納されている画像データに対応する再生モードにおいて、記録された画像データを1つ進めるための指示キーとして機能する「+」キーが押下された後に、該データを格納した後、圧縮／伸張部7により圧縮し、現在の書き込みアドレスに從って、該部の画像データアドレスに更新する。次に、ステップS82で、書き込みアドレスを更新し、ステップS80に進み、シャッターキー9 aが押下された時点で、TG4が作出する画像データを一旦DRAM6に格納した後、圧縮／伸張部7により圧縮し、現在の書き込みアドレスに從って、該部の画像データアドレスに更新する。次に、上述した第3の実施の態様の動作について説明する。

ここで、図15は、画像データの再生時ににおける表示例を示す概念図である。即ち、各画像データの右上隅に表示された数字は、画像データの番号であり、また、「WP」は、その画像データが消去不可(「1」)と設定されている画像データであることを示している。

(a) 画像記録処理

すなわち、「2」、「4」、「6」……「n」の画像データを無効にすることなく、そのまま使用することができます。

(9)

15

17

べき所定の処理を行い、ステップS207で、本シャッターが押下されたか否かを判断する。そして、本シャッターが押下されるまでステップS202～S207のループを繰り返し、本シャッター押しがステップS207で検出されると、ステップS208へ進む。

(0057) D. 第4の実施の態様

次に、本発明の第4の実施の態様について説明する。

D-1. 第4の実施の態様の構成

図17は、本発明の第4の実施の態様による電子カメラシステムを示すブロック図である。図において、電子カメラ21は、図12に説明したものとはほぼ同等の構成となっている。電子カメラ21は、所定の通信プロトコルを有しており、通信回線22に直接接続してもよいし、パーソナルコンピュータ(PC)23を介して接続してもよい。また、電子カメラ21、21同士を赤外線通信24等で接続してもよい。また、通信回線22にプロトコリダクターが接続することにより、画像の伝送に関する様々なサービスを行うことができる。

(0058) D-2. 第4の実施の態様の動作

次に、上述した第4の実施の態様の動作について説明する。図18、図19は、第4の実施の態様による電子カメラ21には、撮像モード、再生モード、撮像モード切替等のキー操作を行ってステップS201へ戻る。

(0063) 次に、画像を改変不可として記憶するための上記ステップS210の詳細について図19を参照して説明する。ステップS221では、画像と改変不可フラグを対応させてDRAM6内に一旦記憶する。改変不可フラグは、電子カメラ21の本体内に記憶されている可変なデータである。本第4の実施の態様によると、電子カメラ21には、撮像モード、再生モード、撮像モード切替がなされる。撮像モードと判別されたとき、ステップS202へ進む。

(0059) (a) 撮影モード

本第4の実施の態様では、シャッターキー9aが2段階構成となっており、プリシャッター(シャッターカス等)の半押し)で、残さばオートフォーカス等の所定の処理を行い、本シャッター押しで、画像の記録を行う。プリシャッターが押されるまでは、ステップS202、S203のループにより、CCD1から撮像した画像を、所定の画像処理を行った後、DRAM6に取り込み、LCD1Bにビューファインダーとしてモニタ表示を行っている。ステップS202でプリシャッター押しが検出されると、ステップS204へ進む。

(0060) ステップS204では、改変不可モードであるか否かを判断する。本第4の実施の態様では、撮像画像を改変不可として撮像するモードと、編集可能として撮像するモードとを切り替えることができる。

改変不可モードに設定されている時は、ステップS205へ進み、警告表示を行う。この警告は、改変不可モードで撮像した画像は、編集、書き換えることができないので、その状態で撮像OKかどうかの判断を促す警告メッセージである。改変不可モードで撮像した画像の消去を禁止するか、消去を可能とするかは適宜選択できる。

(0061) 次に、ステップS206では、例えばオートフォーカスとか、本シャッター押し前に処理しておく

としては、例えば、米国特許出願USP5,530,859、USP5,636,292、USP5,568,570や、国際特許出願WO96-36163、WO96-27259、WO95-141789等がある。本発明では既存の電子透かし手法を採用することでができる点である。すなわち、ステップS254で、指定された画像が改変不可に設定されているか否かを判断する。改変可であれば、ステップS255

で、再生の動作について図24を参照して説明する。キー入力部9の操作により再生モードに設定すると、ステップS231により、何らかの方法で画像を指定する。この指定は、最後に撮像した画像としてもいいし、番号等により指定してもよい。そして、ステップS232で、指定された画像が暗号化されているか否かを判断する。一方、暗号化されていないれば、ステップS234で、そのまま再生表示処理を行う。一方、暗号化されれば、ステップS235で、解読してから表示する。電子透かしが埋め込まれている場合には、ステップS233内で解読する。この分離処理は、テキスト情報を埋め込まれた画像はそのままにして、テキスト情報を再生する方法でもいいし、テキスト情報を完全に取り除く方法でもよい。

(0066) (b) 再生モード

次に、再生の動作について図24を参照して説明する。キー入力部9の操作により再生モードに設定すると、ステップS256で、編集処理を行つた後、ステップS257で、編集後の画像をフリッシュモ8aに書き込む。したがって、画像は改変されることになる。編集処理自体は公知であるので説明は省略する。一方、ステップS254で改変不可と判定される。

(0067) 一方、ステップS258で、編集不可であるメッセージを表示してステップへ戻る。したがって、画像は改変されない。

(0071) [発明の効果] 請求項1記載の発明によれば、記憶制御手段によって、前記撮影手段により撮影した映像を、前記第1の記憶手段または前記第2の記憶手段のいずれかに画像データとして記憶するようになしめたので、第2の記憶手段では、撮影したそのままの映像が画像データとして記憶できるという利点が得られる。

(0072) また、請求項2記載の発明によれば、前記第1の記憶手段および第2の記憶手段を複数可能とし、一度にどちらか一方が装置されるようになしめたので、第2の記憶手段では、撮影したそのままの映像が画像データとして記憶できとともに、撮影した画像データを書き換え可能な記憶手段としては、第1の記憶手段を接続し、撮影した画像データを書き換え不可で記憶したい場合には、第2の記憶手段を接続することで、目的に応じてどちらの方法でも簡単できる。

(0067) そして、ステップS234で解読された画像の表示処理を行ふ。改変不可とされている画像は、必ず暗号化されているから、解読機能を有していない画像処理装置などで再生されることはない。そして、このステップS234の表示処理では、内蔵LCD16への出力のみしかできないように対応しており、ビデオ出力は、アナログ出力、デジタル出力共にできないようになっている。もし、ビデオ出力してしまふと、別の画像処理装置等で受信され、改変されてしまふ可能性があるからである。

(0068) (c) 送信モード

ここで、電子カメラ21の通信手段による画像送信の動作について図25を参照して説明する。ステップS240、S241、S242は、図24に示すステップS231、S232、S233と同様であるので説明を省略する。指定された画像が改変可であれば、ステップS243で、そのまま送信する。一方、指定された画像が改変不可であれば、ステップS244で、送信不可であることを示すメッセージを表示する。

(0069) このように、本第4の実施の態様の電子カメラ21による画像送信の場合には、改変不可の画像データを一括して記憶するようにして記憶する。したがって、別の画像処理装置等で受信され、見られたり、改変されたりすることを防止できる。

(0070) (d) 編集モード

次に、編集の動作について図26を参照して説明する。ステップS251、S252、S253は図24に示すように、編集手段に応答して撮像画像に画像に改変不可であることを示す識別情報と共に暗号化され、改変不可に設定された画像は識別情報と共に暗号化され、改変不可モードで記憶する。また、請求項5記載の発明によれば、改変不可モードで記憶された画像は識別情報と共に暗号化され、改変不可モードで記憶する。ただし、改変不可モードを後で改変される。

以上の如きが本発明の特徴である。

ステップS231、S232、S233と同様であるので説明を省略する。再生との相違点は、再生では画像を見ただけであるのにかし、編集では画像を改変して再書き込みすることができる点である。すなわち、ステップS254で、指定された画像が改変不可に設定されているか否かを判断する。改変可であれば、ステップS255

で、図24のステップS234と同様に再生表示処理を行う。そして、ステップS256で、編集処理を行つた後、ステップS257で、編集後の画像をフリッシュモ8aに書き込む。したがって、画像は改変されることになる。編集処理自体は公知であるので説明は省略する。一方、ステップS254で改変不可と判定される。

(0071) [発明の効果] 請求項1記載の発明によれば、記憶制御手段によって、前記撮影手段により撮影した映像を、前記第1の記憶手段または前記第2の記憶手段のいずれかに画像データとして記憶するようになしめたので、第2の記憶手段では、撮影したそのままの映像が画像データとして記憶できるという利点が得られる。

(0072) また、請求項2記載の発明によれば、前記第1の記憶手段および第2の記憶手段を複数可能とし、一度にどちらか一方が装置されるようになしめたので、第2の記憶手段では、撮影したそのままの映像が画像データとして記憶できとともに、撮影した画像データを書き換え可能に記憶したい場合には、第1の記憶手段を接続し、撮影した画像データを書き換え不可で記憶したい場合には、第2の記憶手段を接続することで、目的に応じてどちらの方法でも簡単できる。

(0067) そして、ステップS234で解読された画像の表示処理を行ふ。改変不可とされている画像は、必ず暗号化されているから、解読機能を有していない画像処理装置などで再生されることはない。そして、このステップS234の表示処理では、内蔵LCD16への出力のみしかできないように対応しており、ビデオ出力は、アナログ出力、デジタル出力共にできないようになっている。もし、ビデオ出力してしまふと、別の画像処理装置等で受信され、改変されてしまふ可能性があるからである。

(0068) (c) 送信モード

ここで、電子カメラ21の通信手段による画像送信の動作について図25を参照して説明する。ステップS240、S241、S242は、図24に示すステップS231、S232、S233と同様であるので説明を省略する。指定された画像が改変可であれば、ステップS243で、そのまま送信する。一方、指定された画像が改変不可であれば、ステップS244で、送信不可であることを示すメッセージを表示する。

(0069) このように、本第4の実施の態様の電子カメラ21による画像送信の場合には、改変不可の画像データを一括して記憶するようにして記憶する。したがって、別の画像処理装置等で受信され、見られたり、改変されたりすることを防止できる。

(0070) (d) 編集モード

次に、編集の動作について図26を参照して説明する。ステップS251、S252、S253は図24に示すように、編集手段に応答して撮像画像に画像に改変不可であることを示す識別情報と共に暗号化され、改変不可に設定された画像は識別情報と共に暗号化され、改変不可モードで記憶する。また、請求項5記載の発明によれば、改変不可モードで記憶された画像は識別情報と共に暗号化され、改変不可モードで記憶する。ただし、改変不可モードを後で改変される。

以上の如きが本発明の特徴である。

ステップS231、S232、S233と同様であるので説明を省略する。再生との相違点は、再生では画像を見ただけであるのにかし、編集では画像を改変して再書き込みすることができる点である。すなわち、ステップS254で、指定された画像が改変不可に設定されているか否かを判断する。改変可であれば、ステップS255

で、図24のステップS234と同様に再生表示処理

を行つた後、ステップS256で、編集処理を行つた後、ステップS257で、編集後の画像をフリッシュモ8aに書き込む。したがって、画像は改変されることになる。編集処理自体は公知であるので説明は省略する。一方、ステップS254で改変不可と判定される。

(0071) [発明の効果] 請求項1記載の発明によれば、記憶制御手段によって、前記撮影手段により撮影した映像を、前記第1の記憶手段または前記第2の記憶手段のいずれかに画像データとして記憶するようになしめたので、第2の記憶手段では、撮影したそのままの映像が画像データとして記憶できるという利点が得られる。

(0072) また、請求項2記載の発明によれば、前記第1の記憶手段および第2の記憶手段を複数可能とし、一度にどちらか一方が装置されるようになしめたので、第2の記憶手段では、撮影したそのままの映像が画像データとして記憶できとともに、撮影した画像データを書き換え可能に記憶したい場合には、第1の記憶手段を接続し、撮影した画像データを書き換え不可で記憶したい場合には、第2の記憶手段を接続することで、目的に応じてどちらの方法でも簡単できる。

(0067) そして、ステップS234で解読された画像の表示処理を行ふ。改変不可とされている画像は、必ず暗号化されているから、解読機能を有していない画像処理装置などで再生されることはない。そして、このステップS234の表示処理では、内蔵LCD16への出力のみしかできないように対応しており、ビデオ出力は、アナログ出力、デジタル出力共にできないようになっている。もし、ビデオ出力してしまふと、別の画像処理装置等で受信され、改変されてしまふ可能性があるからである。

(0068) (c) 送信モード

ここで、電子カメラ21の通信手段による画像送信の動作について図25を参照して説明する。ステップS240、S241、S242は、図24に示すステップS231、S232、S233と同様であるので説明を省略する。指定された画像が改変可であれば、ステップS243で、そのまま送信する。一方、指定された画像が改変不可であれば、ステップS244で、送信不可であることを示すメッセージを表示する。

(0069) このように、本第4の実施の態様の電子カメラ21による画像送信の場合には、改変不可の画像データを一括して記憶するようにして記憶する。したがって、別の画像処理装置等で受信され、見られたり、改変されたりすることを防止できる。

(0070) (d) 編集モード

次に、編集の動作について図26を参照して説明する。ステップS251、S252、S253は図24に示すように、編集手段に応答して撮像画像に画像に改変不可であることを示す識別情報と共に暗号化され、改変不可に設定された画像は識別情報と共に暗号化され、改変不可モードで記憶する。また、請求項5記載の発明によれば、改変不可モードで記憶された画像は識別情報と共に暗号化され、改変不可モードで記憶する。ただし、改変不可モードを後で改変される。

以上の如きが本発明の特徴である。

ステップS231、S232、S233と同様であるので説明を省略する。再生との相違点は、再生では画像を見ただけであるのにかし、編集では画像を改変して再書き込みすることができる点である。すなわち、ステップS254で、指定された画像が改変不可に設定されているか否かを判断する。改変可であれば、ステップS255

で、図24のステップS234と同様に再生表示処理

いと共に、解説手段があつて解説した場合は、識別情報も解説されて認識されるので、それにより変更を防止することができる、特に電子カメラ以外の装置で再生しようとした場合に有効であるという利点が得られる。

[0075]また、請求項6記載の発明によれば、改変不可に設定された画像には所定の情報をがめ込まれているので、所定の情報を分離する分離手段がないければ解説できないと、分離手段があつて解説手段がない場合は、識別情報を認識されるので、それにより改変を防止することができる、特に撮像した電子スチルカメラの画面記録処理を説明するためのフローチャートである。

[図5] 第1の実施の態様による電子スチルカメラの画像記録処理を説明するためのフローチャートである。

[図6] 第2の実施の態様による電子スチルカメラの構成を示すブロック図である。

[図7] 第2の実施の態様による消去不可メモリが接続されているか否かを検出する処理の動作を説明するためのフローチャートである。

[図8] 第2の実施の態様による電子スチルカメラにおいて、消去不可メモリが装着されているか否かを示すフローダグを説明するための概念図である。

[図9] 第2の実施の態様による電子スチルカメラにおいて、フランクシュメモリまたは消去不可メモリのどちらかを用いるかを選択させる選択処理の動作を説明するためのフローチャートである。

[図10] 第2の実施の態様による電子スチルカメラにおいて、ユーザーによって選択されたメモリを示すフランクシュメモリに格納されている情報を説明するための概念図である。

[図11] 本第2の実施の態様による電子スチルカメラの画像記録処理を説明するためのフローチャートである。

[図12] 第3の実施の態様による電子スチルカメラの構成を示すブロック図である。

[図13] 第3の実施の態様による電子スチルカメラにおいて、フランクシュメモリに格納されている情報を説明するための概念図である。

[図14] 本第3の実施の態様による電子スチルカメラの画像記録処理を説明するためのフローチャートである。

[図15] 画像データの再生時ににおける表示例を示す概念図である。

[図16] 本第3の実施の態様において、バスワードを入力することにより、消去可(書き込み可)とする解除処理を説明するためのフローチャートである。

[図17] 本発明の第4の実施の態様による電子カメラシステムを示すブロック図である。

[図18] 本第4の実施の態様による撮影モード動作(1/3)を説明するためのフローチャートである。

[図19] 第4の実施の態様による撮影モード動作((2/3))を説明するためのフローチャートである。

[図20] 第4の実施の態様による撮影モード動作(3/3)を説明するためのフローチャートである。

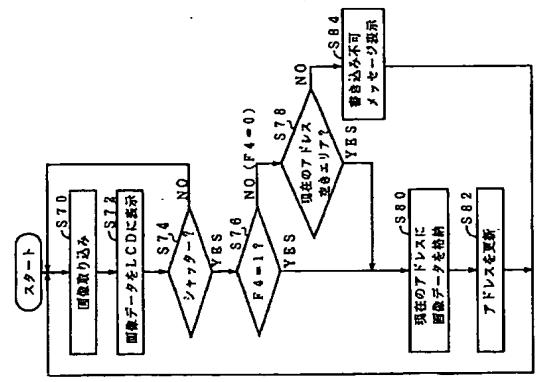
[図21] 画像データを改造不可とする場合の改変不可

フラグの付加方法を説明するための概念図である。

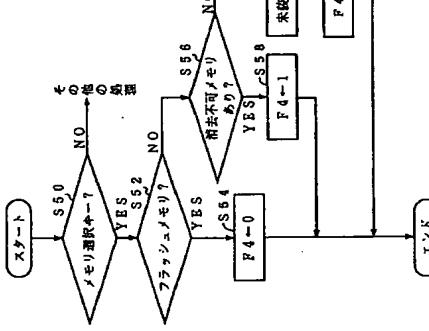
[図22] 画像データを改造不可とする場合の改変不可

フラグの付加方法を説明するための概念図である。

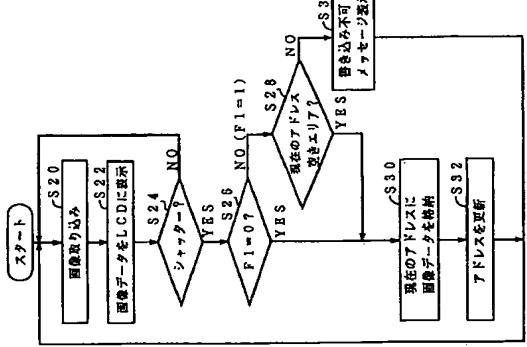
[図11]



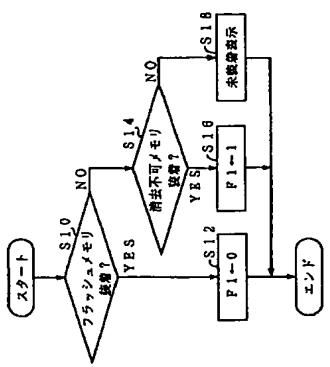
[図9]



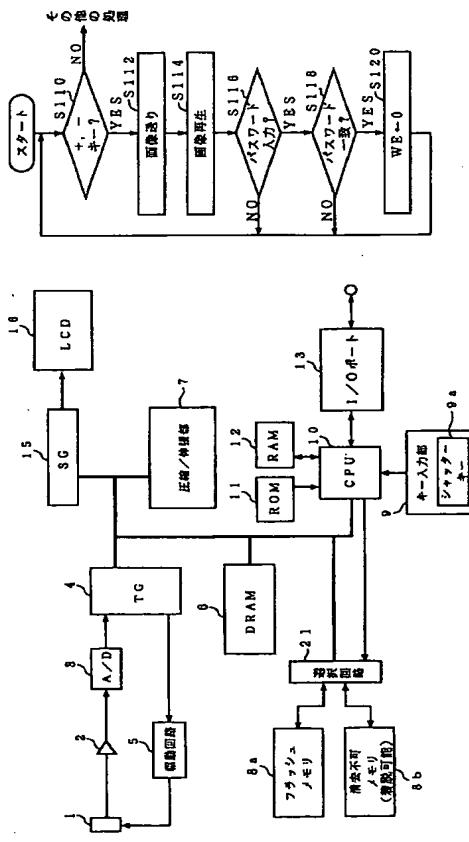
[図11]



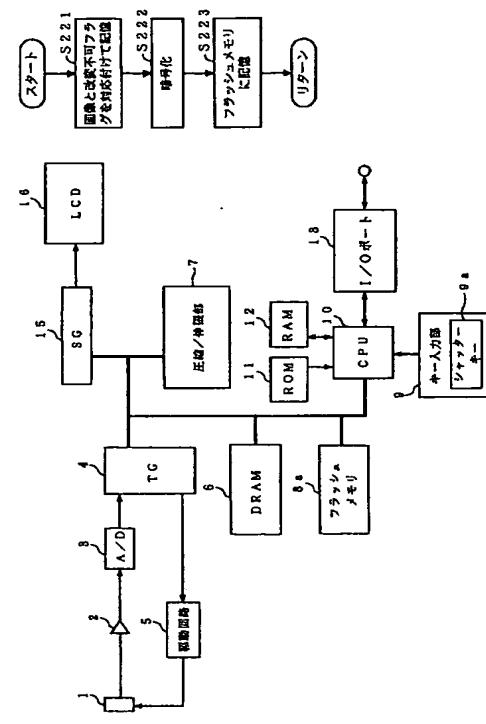
[図5]



[図16]



[図12]



[図20]

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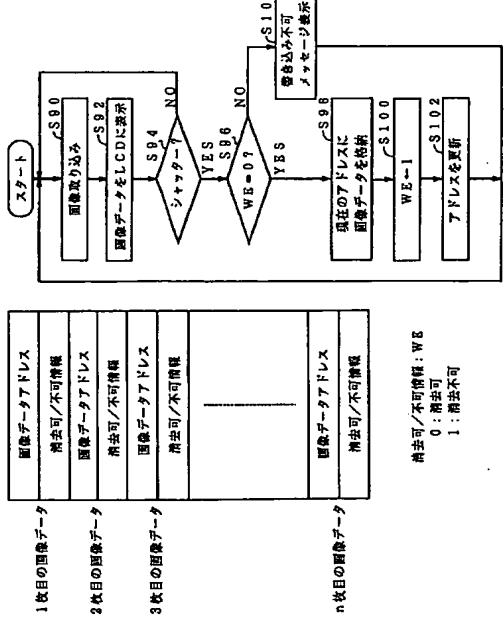
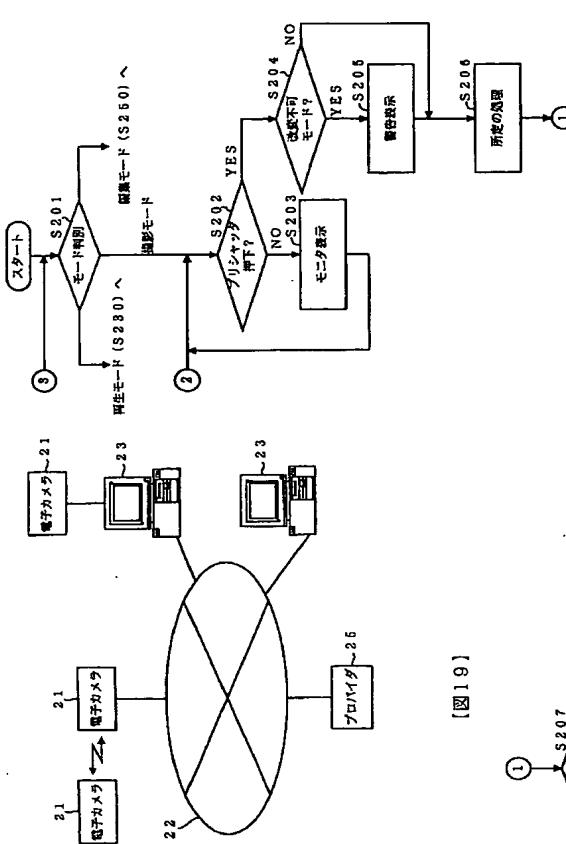
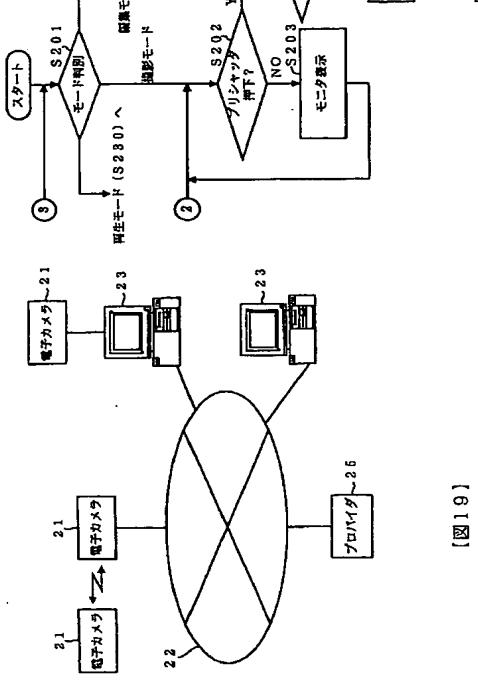


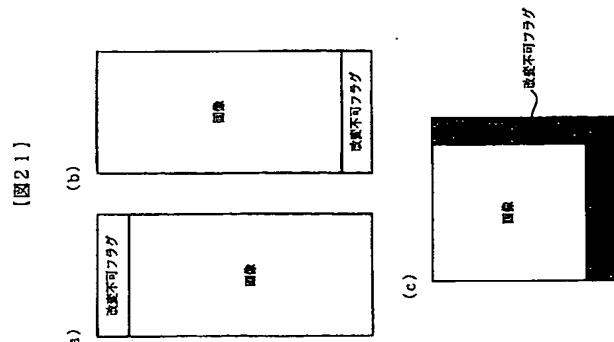
图 141



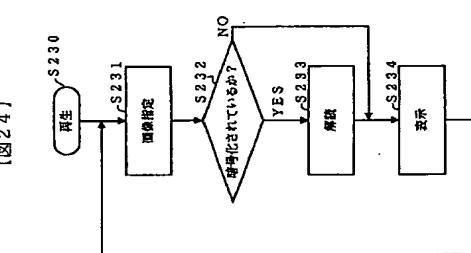
[图171]



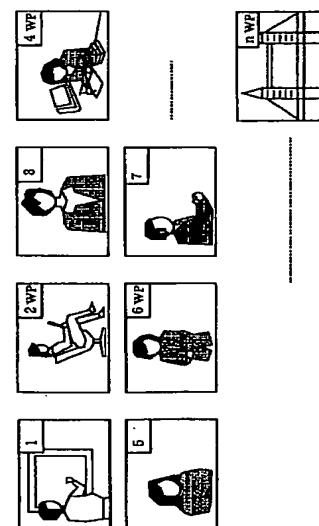
四一八



四二

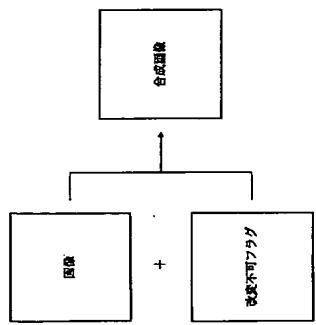


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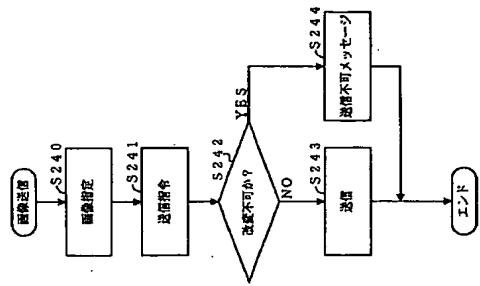


15]

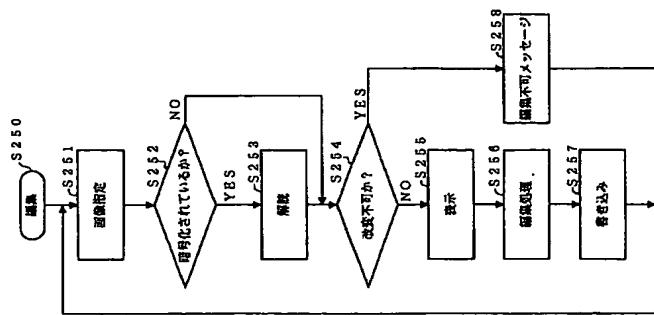
[図22]



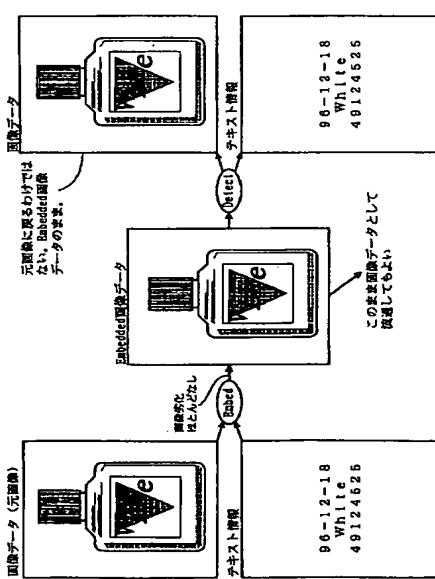
[図25]



[図26]



[図27]



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【手続補正書】
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 【手続補正1】
 【補正対象書類名】明細書
 【補正対象項目名】特許請求の範囲
 【補正方法】変更
 【補正の内容】
 【特許請求の範囲】
 [請求項1]
 映像を撮影する撮影手段と、
 画像データを書き換え可能に記憶する第1の記憶手段と、
 画像データを書き換え不可に記憶する第2の記憶手段と、
 前記撮影手段により撮影した映像を画像データとして、前記第1の記憶手段または前記
 第2の記憶手段のいずれか一方に記憶する記憶制御手段と
 を具備することを特徴とする電子撮像装置。

[請求項2]
 前記第1および第2の記憶手段は、着脱可能であり、一度にどちらか一方が装着されることを特徴とする請求項1記載の電子撮像装置。
 [請求項3]
 前記第1の記憶手段または前記第2の記憶手段のどちらに画像データを記憶するかを選択する選択手段を具備し、
 前記記憶手段は、前記選択手段により選択された記憶手段に、前記撮影手段により撮影した映像を画像データとして記憶することを特徴とする請求項1記載の電子撮像装置。

【手続補正2】
 【補正対象書類名】明細書
 【補正対象項目名】0 0 1 0
 【補正方法】削除
 【補正の内容】

[手続補正3]

【補正対象書類名】明細書
 【補正対象項目名】0 0 1 1
 【補正方法】削除
 【補正の内容】

【手続補正4】
 【補正対象書類名】明細書
 【補正対象項目名】0 0 1 2
 【補正方法】削除
 【補正の内容】

【手続補正5】
 【補正対象書類名】明細書
 【補正対象項目名】0 0 1 3
 【補正方法】削除
 【補正の内容】

【手続補正6】
 【補正対象書類名】明細書
 【補正対象項目名】0 0 1 4
 【補正方法】削除
 【補正の内容】

【手続補正7】
 【補正対象書類名】明細書
 【補正対象項目名】0 0 1 5
 【補正方法】削除
 【補正の内容】

【手続補正8】
 【補正対象書類名】明細書
 【補正対象項目名】0 0 1 6
 【補正方法】削除
 【補正の内容】

【手続補正9】
 【補正対象書類名】明細書
 【補正対象項目名】0 0 1 7
 【補正方法】削除
 【補正の内容】

【手続補正10】
 【補正対象書類名】明細書
 【補正対象項目名】0 0 1 8
 【補正方法】削除
 【補正の内容】

【手続補正11】
 【補正対象書類名】明細書
 【補正対象項目名】0 0 1 9
 【補正方法】削除
 【補正の内容】

[補正方法] 削除
[補正の内容]

[手続補正 1.2]
[補正対象書類名] 明細書
[補正対象項目名] 0 0 2 0
[補正方法] 削除
[補正の内容]

[手続補正 1.3]
[補正対象書類名] 明細書
[補正対象項目名] 0 0 7 4
[補正方法] 削除
[補正の内容]

[手続補正 1.4]
[補正対象書類名] 明細書
[補正対象項目名] 0 0 7 5
[補正方法] 削除
[補正の内容]

[手続補正 1.5]
[補正対象書類名] 明細書
[補正対象項目名] 0 0 7 6
[補正方法] 削除
[補正の内容]

[手続補正 1.6]
[補正対象書類名] 明細書
[補正対象項目名] 0 0 7 7
[補正方法] 削除
[補正の内容]